United States Department of Agriculture

Telegraph Vegetation Project

Final Environmental Impact Statement

Volume III – Appendices

Forest Service Helena – Lewis and Clark National Forest Helena Ranger District April 2016

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TELEGRAPH VEGETATION PROJECT
Final Environmental Impact Statement, Volume III – Appendices
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Abstract: This final environmental impact statement (FEIS) considers four alternatives in detail. Alternative 1 is the no-action alternative, which provides a baseline for comparing the magnitude of environmental effects of the action alternatives. Alternative 2 would treat approximately 6,754 acres in the project area with a combination of intermediate harvest (434 acres), precommercial thinning (1,786 acres), regeneration harvest (3,484 acres), and prescribed fire (1,050 acres). Connected actions for alternative 2 would include 8.5 miles of temporary road construction (followed by full obliteration), 43.1 miles of road maintenance, 32.6 miles road reconstruction, and improvement of 6 road/stream crossings. Alternative 3 would treat approximately 4,185 acres in the project area with a combination of intermediate harvest (434 acres), precommercial thinning (1,289 acres), regeneration harvest (1,856 acres), and prescribed fire (606 acres). Connected actions for alternative 3 would include 3.4 miles of temporary road construction (followed by full obliteration), 41.8 miles of road maintenance, 28.7 miles of road reconstruction, 32.8 miles of road decommissioning, and improvement of 9 road/stream crossings. Alternative 4 (Preferred Alternative) would treat approximately 8,103 acres in the project area with a combination of intermediate harvest (360 acres), precommercial thinning (1,305 acres), regeneration harvest (4,671 acres), and prescribed fire (1,013 acres). Connected actions for alternative 4 would include 9.7 miles of temporary road construction (followed by full obliteration), 43.1 miles of road maintenance, 35.8 miles of road reconstruction, 32.8 miles of road decommissioning, improvement of 24 road/stream crossings, and 0.7 mile road construction (specified) to replace an existing segment of system road that is in a poor location.

Telegraph Vegetation Project

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Appendix A. Unit Treatment and Silvicultural Summary

Table A-2 shows units in the project area. It includes information and descriptions on current and target conditions. Please see the project record and/or individual specialists' reports for more detailed information. ***Note:*** The following abbreviations can be found in table A-2.

Table A-1. Abbreviations found in table A-2

MA management area
Regen regeneration

Key to Species Composition
DF Douglas-fir
LP lodgepole pine
WBP whitebark pine
SAF subalpine fir
AS aspen
ES Engelmann spruce

Key to Regen
NRG Natural Regeneration
N/A Regeneration Not an Objective
Adv Advanced

Key to Logging Systems
Log Sys Logging system
T Tractor
S Skyline/cable
N/A None (hand treat)

Key to Forest Types
NF non-forested
DF Douglas-fir
LP lodgepole pine
SAF subalpine Fir
ES Engelmann spruce
AS aspen

Habitat Type Key
NF Non-forested
230 PSME/FESC (Douglas-fir/rough fescue)
250 PSME/VACA (Douglas-fir/dwarf huckleberry)
262 PSME/PHMA-CARU (Douglas-fir/ninebark, pinegrass phase)
280 PSME/VAGL (Douglas-fir/blue huckleberry)
281 PSME/VAGL-VAGL (Douglas-fir/blue huckleberry, blue huckleberry phase)
290 PSME/LIBO (Douglas-fir/twinflower)
292 PSME/LIBO-CARU (Douglas-fir/twinflower, pinegrass phase)
323 PSME/CARU-CARU (Douglas-fir/pinegrass, pinegrass phase)
350 PSME/ARUV (Douglas-fir/kinnickinnick)
470 PICEA/LIBO (Spruce/twinflower)
640 ABLA/VACA (Subalpine fir/dwarf huckleberry)
650 ABLA/CACA (Subalpine fir/bluejoint)
651 ABLA/CACA-CACA (Subalpine fir/bluejoint, bluejoint phase)
654 ABLA/CACA-VACA (Subalpine fir/bluejoint, dwarf huckleberry phase)
660 ABLA/LIBO (Subalpine fir/twinflower)
662 ABLA/LIBO-XETE (Subalpine fir/twinflower, beargrass phase)
663 ABLA/LIBO-VASC (Subalpine fir/twinflower, grouse whortleberry phase)
670 ABLA/MEFE (Subalpine fir/menziesia)
690 ABLA/XETE (Subalpine fir/beargrass)
691 ABLA/XETE-VAGL (Subalpine fir/beargrass, blue huckleberry phase)
692 ABLA/XETE-VASC (Subalpine fir/beargrass, grouse whortleberry phase)
720 ABLA/VAGL (Subalpine fir/blue huckleberry)
730 ABLA/VASC (Subalpine fir/grouse whortleberry)
740 ABLA/ALSI (Subalpine fir, Sitka alder)
750 ABLA/CARU (Subalpine fir/pinegrass)

Table A-2: Proposed Action Treatments and Silvicultural Summary

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
001	143	2,3,4	143	T-1	Intermediate Harvest	Improvement Cut, Slashing, Jackpot Burn	T	NRG AS/DF/LP	AS	292	N	35LP/25DF/ 30ES, AS	95
002	34	2,3,4	34	T-1	Intermediate Harvest	Improvement Cut, Slashing, Jackpot Burn	T	NRG AS/DF/LP	AS	292	N	35LP/25DF/ 30ES, AS	95
003	6	2,3,4	6	T-1	Precommercial Thinning	Precommercial Thin	T	NRG AS/DF/LP	AS	281	N	35LP/25DF/ 30ES AS	95
004	5	2,3,4	5	T-1	Precommercial Thinning	Precommercial Thin	T	NRG AS/DF/LP	AS	660	N	35LP/25DF/ 30ES AS	95
005	29	2,3,4	29	T-1	Intermediate Harvest	Improvement Cut, Slashing, Jackpot Burn	T, S	N/A	DF	323	N	60DF/30LP/ 10AS	100
006	14	2,3,4	14	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	290	N	80LP/20DF	0
007	85	2,3,4	85	T-1	Intermediate Harvest	Improvement Cut, Slashing, Jackpot Burn	T	N/A	DF	292	N	60DF/30LP/ 10AS	100
008	61	2,3,4	61	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	DF	323	N	60DF/40LP	0
009	32	2,3,4	32	T-1	Intermediate Harvest	Improvement Cut, Slashing, Jackpot Burn	T	N/A	LP	292	N	70LP/30DF, AS	95

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
010	15	2,3,4	15	T-1	Intermediate Harvest	Improvement Cut, Slashing, Jackpot Burn	S	N/A	DF	292	N	70DF/30LP, AS	100
011	113	2,3 4	113 72	T-1	Regeneration Harvest	2-aged Shelterwood with Reserves, Site Prep Burn	T	NRG DF/ES/LP	LP	662	Y (2,3,4)	80LP/15DF/5ES, SAF	85
11s	41	2,3 4	0 41	T-1	Regeneration Harvest	2-aged Shelterwood with Reserves, Site Prep Burn	G	NRG DF/ES/LP	LP	662	Y (4)	80LP/15DF/5ES, SAF	85
012	30	2,3,4	30	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	730	N	LP/DF/SAF/AS	0
013	14	2,3,4	14	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	LP/DF/SAF	0
014	7	2,3,4	7	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	LP/DF	0
015	12	2,3,4	12	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	DF	292	N	55DF/40LP/ 5SAF	20
016	32	2,4 3	32 0	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	730	N	LP/DF/SAF	0
017	22	2,3,4	22	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	DF	692	N	60DF/40LP	20
018	69	2,3,4	69	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	691	N	85LP/15DF	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
019	47	2,4 3	47 16	T-1 M-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG DF/ES/LP	LP	740	Y (2,4)	80LP/20DF, ES, SAF	85
020	21	2,3,4	21	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/DF/ES/AS	LP	662	N	99LP/1ES, DF, AS	90
021	15	2,3,4	15	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	LP/DF/SAF	0
022	65	2,4 3	65 48	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	S	Adv & NRG LP/DF/ES	LP	662	Y (2,3,4)	90LP/10ES, DF, SAF	85
023	22	2,3,4	22	T-1	Intermediate Harvest	Improvement Cut, Slashing, Jackpot Burn	T	N/A	LP	292	N	60LP/30DF/ 10SSAF, AS	95
024	11	2,3,4	11	M-1	Prescribed Fire	Slashing, Handpiling, Burning Piles	N/A	N/A	LP	660	N	70LP/30DF	100
025	35	2,3,4	35	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	692	N	LP/ES	0
026	28	2,3 4	28 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	692	N	LP/ES	0
027	37	2,4 3	37 13	T-1	Regeneration Harvest	2-aged Shelterwood with Reserves, Site Prep Burn	T	NRG DF/ES/LP	LP	662	N	75LP/25DF, ES, SAF	80
028	11	2,3 4	11 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	LP/ES	0
029	24	2,3 4	24 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	LP/ES	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
030	10	2,3,4	10	T-1	Regeneration Harvest	Clearcut with Leave Trees	T	Adv, NRG DF/ES/LP	LP	662	N	95LP/5DF, ES, SAF	85
031	5	2,3 4	5 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	LP/SAF/ES	0
032	18	2,3,4	18	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	LP/ES/SAF	0
033	21	2 3,4	21 0	T-1 M-1	Regeneration Harvest	Clearcut with Leave Trees	T,S	Adv & NRG DF/ES/LP	LP	692	N	90/P/10ES, SAF, DF	95
034	363	2 3 4	343 203 363	T-1 M-1	Regeneration Harvest	Clearcut with Leave Trees Clearcut with Leave Trees, Jackpot Burn	T,S	Adv & NRG DF/ES/LP	LP	692	Y (2,3,4)	90/P/10ES, SAF, DF	95
035	313	2 3 4	313 77 0	T-1 M-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	Adv & NRG DF/ES/LP	LP	692	N	90LP/10ES, SAF, DF	95
35b	264	2,3 4	0 264	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG DF/ES/LP	LP	692	Y (4)	60LP, 25ES, 15DF/SAF	95
35c	105	2,3 4	0 105	T-1	Rearrangement of Fuels	Mechanical Rearrangement of Fuels, Broadcast Burn	N/A	N/A	LP/DF	692	N	60LP, 35DF, 5ES	95
35d	58	2,3 4	0 58	T-1 M-1	Regeneration Harvest	2-Aged Shelterwood with Reserves, Site Prep Burn	T	NRG DF/LP	DF/LP	323	Y (4)	80DF, 20LP	95
036	85	2 3 4	85 0 85	T-1 M-1	Regeneration Harvest	Clearcut with Leave Trees Clearcut with Leave Trees, Jackpot Burn	T,S	Adv & NRG DF/ES/LP	LP	692	Y (2,4)	90/P/10ES, SAF, DF	95

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
037	29	2 3 4	29 0 29	T-1 M-1	Regeneration Harvest	Clearcut with Leave Trees Clearcut with Leave Trees, Jackpot Burn	T,S	Adv & NRG DF/ES/LP	LP	692	Y (2,4)	90/P/10ES, SAF, DF	95
038	36	2,3,4	36	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	LP/ES/SAF	0
039	11	2,3,4	11	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	662	N	LP/ES/SAF	0
040	40	2,3,4	40	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	LP/ES/SAF	0
041	5	2,3,4	5	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	LP/ES/SAF	0
042	10	2,4 3	10 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	LP/SAF	0
043	16	2,3,4	16	M-1	Regeneration Harvest	2-aged Seedtree with Reserves	T	NRG DF, LP	LP	323	N	85LP/15DF	100
044	9	2,3,4	9	M-1	Regeneration Harvest	Clearcut with Leave Trees	T	NRG LP, DF	LP	640	N	99LP/1DF	100
045	20	2,3 4	20 0	M-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	262	N	DF/LPS/SAF	0
046	7	2,3 4	7 0	M-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	692	N	DF/LP/SAF	0
047	11	2,4 3	11 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	651	N	LP/AF/ES	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
048	28	2,3,4	28	T-1	Precommercial Thinning	Pre-commercial Thin, Underburn	N/A	N/A	LP	692	N	LP/SAF	0
049	22	2,4 3	22 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	692	N	80LP/20SAF/ 1DF	0
050	37	2,4 3	37 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	730	N	LP/SAF	0
051	6	2,4 3	6 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	662	N	80LP/15ES/ 5SAF	0
052	20	2,3,4	20	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/ES/WB	LP	662	N	80LP/20SAF, ES	80
053	29	2,4 3	29 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	80LP/10SAF/ 10ES	0
054	10	2,3,4	10	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	SAF/LP	0
055	10	2,3,4	10	M-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	323	N	DF/LP/SAF	0
056	71	2,4 3	71 0	T-1	Regeneration Harvest	2-aged Seedtree with Reserves, Site Prep Burn	T	NRG WBP, DF, LP, SAF	LP	692	Y (2,4)	65LP/15DF/ 20SAF, ES, WB	100
057	35	2,4 3	35 29	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	692	N	DF/LP/SAF	0
058	25	2,4 3	25 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	323	N	LP/SAF	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
059	95	2,4 3	95 29	T-1	Regeneration Harvest	2-aged Seedtree with Reserves, Site Prep Burn	T	NRG WBP, DF, LP, SAF	DF	692	Y (2,4)	30DF/30WB/ 30LP/10SAF	80
060	63	2,4 3	63 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG WBP/DF/LP	LP	692	Y (2,4)	80LP/15SAF/ 5DF, WB	50
061	18	2,4 3	18 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG WBP/DF/LP	LP	692	Y (2,4)	80LP/15SAF/ 5DF, WB	50
062	12	2,4 3	12 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	692	N	LP/SAF	0
063	126	2,4 2	126 70	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP, ES, SAF	LP	692	Y (2,3,4)	70LP/30SAF, ES	60
064	12	2,3,4	12	M-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	650	N	80LP/20ES	0
065	33	2,3,4	33	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	692	N	LP/DF/SAF	0
066	78	2,4 3	78 63	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP, ES, SAF	LP	692	Y (2,3,4)	98LP/2SAF, ES	60
067	14	2,3,4	14	M-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	DF	654	N	60DF/25ES/ 15LP	0
068	12	2,3 4	12 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	230	N	90LP/10ES	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
069	10	2,3,4	10	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP/DF/ES	LP	692	N	99LP/1ES, DF, SAF	50
070	14	2 3, 4	14 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	ES	350	N	50ES/45LP/ 5DF	0
071	19	2 3,4	19 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	350	N	60LP/40ES	0
072	5	2,3 4	5 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	ES	350	N	75ES/15LP/ 10DF	0
073	27	2 3,4	27 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	S	Adv & NRG LP/DF/ES	LP	640	Y (2)	80LP/15SAF/ 5DF, ES	95
074	5	2,3,4	5	T-1	Regeneration Harvest	2-Aged Shelterwood with Reserves, Site Prep Burn	S	NRG WBP, DF, LP, SAF	SAF	640	N	40SAF/30LP/ 20DF/10ES, WB	100
075	20	2 3,4	20 0	T-1	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	S	Adv & NRG LP/WB/DF/ES	LP	692	Y (2)	70LP/15SAF/ 15ES, DF, WB	90
076	22	2,4 3	22 0	T-1	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	S	Adv & NRG LP/WB/DF/ES	LP	692	Y (2,4)	70LP/15SAF/ 15ES, DF, WB	90
077	106	2,3,4	106	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/DF/ES	LP	691	Y (2,3,4)	80LP/15SAF/ 5DF, ES	95
078	30	2,3 4	30 30	T-1	Precommercial Thinning Whitebark Pine Release	Precommercial Thin Whitebark Pine Release	N/A	N/A	LP	640	N	85LP/15ES trace WB	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
079	25	2 3 4	25 0 25	T-1	Precommercial Thinning Rearrangement of Fuels	Precommercial Thin Mechanical Rearrangement of Fuels, Broadcast Burn	T	N/A	LP	692	N	99LP/1DF, ES	40
080	21	2,4 3	21 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	S	Adv & NRG WB, DF, LP	LP	692	Y (2,4)	80LP/10WB/ 10SAF, ES, DF	70
081	10	2,4 3	10 0	T-1	Regeneration Harvest	Clearcut with Leave Trees	S	NRG LP/DF/ES	SAF	640	Y (2,4)	70SAF/30LP/ trace ES, DF	70
082	7	2,3 4	7 7	T-1	Precommercial Thinning Whitebark Pine Release	Precommercial Thin Whitebark Pine Release	N/A	N/A	LP	640	N	60LP/35SAF/5ES traceWB	0
083	3	2,3 4	3 3	T-1	Precommercial Thinning Whitebark Pine Release	Precommercial Thin Whitebark Pine Release	N/A	N/A	LP	640	N	55LP/45ASF/ 10ES/trace WB	0
084	54	2,4 3	54 6	T-1	Regeneration Harvest	Clearcut with Reserves, Site Prep Burn	T	Adv & NRG LP/WB/DF/ES	LP	640	Y (2,3,4)	70LP/15SAF/ 15ES, DF, WB	90
085	32	2,4 3	32 7	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	S	NRG LP/DF/ES	SAF	690	Y (2,3,4)	70SAF/30LP/ trace ES, DF	70
086	37	2,3 4	37 37	T-1	Precommercial Thinning Whitebark Pine Release	Precommercial Thin Whitebark Pine Release	N/A	N/A	LP	692	N	60LP/40SAF	0
087	42	2,3 4	42 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG WB, DF, LP	LP	692	Y (2,3,4)	90LP/5DF/ 5SAF	90

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
088	67	2,3,4	67	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	S	Adv & NRG WB, DF, LP	LP	640	Y (2,3,4)	90LP/5DF/ 5SAF	90
089	141	2,4 3	141 115	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG WB, DF, LP	LP	640	Y (2,3,4)	80LP/10WB/ 10SAF, ES, DF	70
090	3	2,3 4	3 3	T-1	Precommercial Thinning Whitebark Pine Release	Precommercial Thin Whitebark Pine Release	N/A	N/A	LP	670	N	95LP/5SAF	0
091	94	2,3,4	94	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	NRG LP	LP	692	Y (2,3,4)	90LP/10SAF	85
092	11	2 3,4	11 0	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	350	N	50LP/30SAF/ 10ES/5DF/5pifl	0
093	59	2,3,4	59	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG WB, DF, LP	LP	692	Y (2,3,4)	90LP/5DF/ 5SAF	90
094	11	2,3 4	11 11	T-1	Precommercial Thinning Whitebark Pine Release	Precommercial Thin Whitebark Pine Release	N/A	N/A	SAF	690	N	50SAF/40LP/ 10ES/traceWB	0
095	29	2,3 4	29 29	T-1	Precommercial Thinning Whitebark Pine Release	Precommercial Thin Whitebark Pine Release	N/A	N/A	SAF	640	N	45SAF/30LP/ 15ES/trace WB	0
096	19	2,3 4	19 19	T-1	Precommercial Thinning Whitebark Pine Release	Precommercial Thin Whitebark Pine Release	N/A	N/A	LP	690	N	90LP/5ES/ 5SAF/ traceWB	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
097	20	2,3 4	20 20	M-1 T-1	Precommercial Thinning Whitebark Pine Release	Precommercial Thin Whitebark Pine Release	N/A	N/A	LP	690	N	80LP/10SAF/ 10ES/traceWB	0
098	5	2,3 4	5 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	292	N	70LP/20ES/ 5DF/5SAF	0
099	11	2 3,4	11 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	80LP/15ES/ 5SAF	0
100	6	2,4 3	6 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	250	N	100LP	0
101	78	2,4 3	78 71	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP/SAF	LP	692	Y (2,3,4)	99LP/1SAF	80
102	8	2,3,4	8	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	690	N	100LP	0
103	31	2 3,4	31 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP/SAF	LP	692	N	98LP/2SAF	75
103a	13	2 3,4	0 13	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP/SAF	LP	692	N	98LP/2SAF	75
104	47	2,4 3	47 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP	LP	692	Y (2)	98LP/2SAF, ES	30
105	62	2,3,4	62	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP	LP	692	Y (2,3)	98LP/2SAF, ES	30

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
106	95	2 3 4	95 36 94	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP	LP	692	Y (2,4)	98LP/2SAF, ES	30
107	7	2,3,4	7	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	651	N	LP/SAF	0
108	2	2,3 4	2 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	670	N	LP/DF/SAF	0
109	40	2,3,4	40	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG WB, LP	LP	692	N	80LP/10ES/ 10SAF, WB	85
110	7	2,4 3	7 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG WB, LP	LP	692	N	90LP/10SAF, ES, WB	35
111	22	2,4 3	22 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG WB, LP	LP	692	Y (2,4)	90LP/10SAF, ES, WB	35
112	17	2,4 3	17 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP	LP	692	Y (2,4)	100LP/trace other	30
113	50	2,4 3	50 33	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP	LP	692	Y (2,4)	100LP/trace other	30
114	12	2,3,4	12	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG LP/ES/SAF	LP	692	N	90LP/5SAF/5ES	90
115	32	2,3 4	32 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	730	N	LP/other	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
116	76	2,4 3	76 23	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG LP/ES/SAF	LP	654	Y (2,4)	90LP/5SAF/ 5ES	90
117	95	2,4 3	95 6	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG LP/ES/SAF	LP	692	Y (2,4)	90LP/5SAF/5ES	90
118	10	2,3,4	10	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	730	N	SAF/LP	0
119	29	2,4 3	29 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	250	N	LP/AF	0
120	27	2,4 3	27 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	692	N	SAF/LP	0
121	10	2,3,4	10	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP/SAF	LP	692	N	99LP/1SAF	60
122	285	2 3 4	285 251 0	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	NRG LP/ES/WB	LP	692	N	99LP/1 ES, SAF, WB	90
122c	139	2,3 4	0 139	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	N/A	NRG LP/ES/WB	LP	692	Y (4)	99LP/1 ES, SAF, WB	90
122d	45	2,3 4	0 45	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	N/A	NRG LP/WB	LP	692	Y (4)	80LP/20DF	90
122e	137	2,3 4	0 137	T-1	Rearrangement of Fuels	Mechanical Rearrangement of Fuels, Broadcast Burn	N/A	N/A	LP	692	N	99LP/1 ES, SAF, WB	90
123	295	2 3	295 142	W-1	Prescribed Fire Rearrangement of Fuels	Slashing, Broadcast Burn Mechanical Rearrangement of	N/A	LP	LP	670	N	80LP/20SAF	90

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
		4	227	M-1 T-1		Fuels, Broadcast Burn							
123c	68	2,3 4	0 68	M-1 T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	N/A	LP	LP	670	Y (4)	80LP/20SAF	90
124	37	2,3	37	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	60LP/40DF	0
125	2	2 3,4	2 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	750	N	80LP/15SAF/5DF	0
126	128	2,4 3	128 0	T-1 M-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	50LP/30ES/ 18SAF/2DF	0
127	16	2,3,4	16	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	660	N	75LP/20SAF/ 4ES/1DF	0
128	19	2,3,4	19	T-1	Regeneration Harvest	Clearcut with Leave Trees	T	Adv & NRG LP/DF/ES/ SAF	LP	663	N	90LP/10ES, SAF, DF	95
129	8	2,4 3	8 3	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	LP/SAF	0
130	1	2,3,4	1	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	650	N	80LP/10SAF/ 10ES	0
131	3	2,3,4	3	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	323	N	55LP/20SAF/ 15ES/10DF	5
132	3	2,3,4	3	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	660	N	40LP/30SAF/ 30ES	0
133	5	2,3,4	5	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	740	N	LP/SAF/DF	0
134	16	2,3,4	16	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	720	N	50LP/30ES/ 15SAF	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
135	3	2,3,4	3	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	50LP/50SAF	0
136	3	2,3,4	3	W-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	SAF	720	N	60SAF/40LP	0
137	14	2,4 3	14 8	W-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	75LP/15SAF/ 10ES	0
138	13	2,4 3	13 0	M-1	Regeneration Harvest	Clearcut with Leave Trees	T	Adv & NRG LP/DF/ES/ SAF	LP	692	N	80LP/10ES/ 10DF, SAF	100
139	9	2,3,4	9	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	660	N	65LP/15ES/ 10SAF/5DF	0
140	22	2,3,4	22	M-1 T-1	Regeneration Harvest	Clearcut with Leave Trees	T	Adv & NRG LP/DF/ES/ SAF	LP	651	N	80LP/10ES/ 10DF, SAF	100
141	40	2,3,4	40	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	75LP/10DF/ 10ES/5AF	0
142	58	2,4 3	58 38	M-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	NRG LP/ES/WB	LP	692	N	80LP/15ES/ 5WB	90
143	70	2,4 3	70 45	T-1 M-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	Adv & NRG LP/DF/ES/ SAF	LP	690	Y (2,3,4)	75LP/15ES/ 5DF/5SAF	100
144	15	2,4 3	15 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	690	N	70LP/15DF/ 10ES/5SAF	0
145	67	2,4 3	67 55	T-1	Regeneration Harvest	Clearcut with Leave Trees, Site Prep Burn	T	NRG LP, DF	LP	640	Y (2,3)	85LP/15DF	95
146	3	2,4 3	3 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	DF	640	N	60DF/30LP/ 10SAF	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
147	24	2,3 4	24 18	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	292	N	55LP/35DF/ 5SAF/5AS	0
148	10	2,3 4	10 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	280	N	60LP/35DF/ 5SAF	0
149	3	2,3,4	3	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	663	N	50LP/40DF/ 10ES	0
150	15	2,3 4	15 5	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	470	N	90LP/10DF	0
151	25	2,3,4	25	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	720	N	65LP/20ES/ 10DF/5SAF	0
152	115	2,3,4	115	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/DF/AS	LP	640	Y (2,3,4)	85LP/10DF/ 5AS	95
153	30	2,3,4	30	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	290	N	60LP/30AS/ 10DF	0
154	74	2,3 4	74 74	T-1	Intermediate Harvest Regeneration Harvest	Improvement Cut, Slashing, Jackpot Burn Clearcut with Leave Trees, Jackpot Burn	S	Adv & NRG LP/DF/AS	LP	323	Y (4)	85LP/10DF/ 5AS	95
155	40	2,3,4	40	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	281	N	50LP/40DF/ 10AS	0
156	10	2,3,4	10	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	50LP/35ES/ 10SAF/5DF	0
157	6	2,4 3	6 0	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	ES	720	N	70ES/30LP	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
158	90	2,4 3	90 26	T-1	Regeneration Harvest	Clearcut with Leave Trees	T	Adv & NRG LP/DF/ES/ SAF	LP	281	Y (2,4)	80LP/15ES/ 5DF, SAF	100
159	26	2,3,4	26	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	640	N	80LP/10ES/ 5DF/5SAF	0
160	89	2,3,4	89	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/DF/ES/ SAF	LP	470	Y (2,3)	90LP/5DF/ 5ES, SAF	85
161	10	2,3,4	10	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	250	N	80LP/10SAF/ 5DF	0
162	10	2,3,4	10	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	250	N	85LP/10DF/ 5SAF	0
163	10	2,3,4	10	T-1	Precommercial Thinning	Precommercial Thin	T	N/A	LP	660	N	75LP/10DF/ 10SAF/5ES	5
164	23	2,3,4	23	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	660	N	85LP/10ES/ 5DF	0
165	127	2,4 3	127 38	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/DF/ES/ SAF	LP	281	Y (2,3,4)	90LP/5DF/5ES	90
166	17	2,3,4	17	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	250	N	60LP/40DF	0
167	254	2,4 3	254 0	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/DF/ES/ SAF	LP	281	Y (2,4)	90LP/10ES, SAF, DF	95
168	18	2,3 4	18 0	T-1	Precommercial Thinning	Precommercial Thin	N/A	N/A	LP	720	N	85LP/10DF/ 5ES	0
169	103	2 3	0 87	T-1 M-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	LP	670	N	80LP/20SAF	90

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
		4	103		Rearrangement of Fuels	Mechanical Rearrangement of Fuels, Broadcast Burn							
170	44	2,3 4	0 44	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/DF/ES	LP	663	Y (4)	80LP/15DF/S5ES	90
171	143	2,3 4	0 143	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG DF/LP/SAF	DF/LP	323	Y (4)	50DF/40LP/ 10SAF	80
172a	174	2,3 4	0 174	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG DF/ES/LP	DF/LP	663	Y (4)	40DF/40LP/20ES	80
175	154	2,3 4	0 154	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/ES	LP	692	Y (4)	95LP/5ES	95
176	57	2,3 4	0 57	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	S	Adv & NRG LP/ES	LP	692	Y (4)	60LP/40DF	90
177	36	2,3 4	0 36	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/SAF	LP	692	Y (4)	99LP/SAF	90
179	5	2,3 4	0 5	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG LP/DF/ES/ SAF	LP	692	Y(4)	80LP/15SAF/ 5DF ES	90
180	11	2,3 4	0 11	T-1 M-1	Regeneration Harvest	2-Aged Shelterwood with Reserves, Site Prep Burn	S	Adv & NRG DF/ES/LP/ SAF	DF/ES	692	N	60DF/20ES/10SAF/10LP	95
181	21	2,3 4	0 21	T-1	Regeneration Harvest	Clearcut with Leave Trees, Jackpot Burn	T	Adv & NRG DF/ES/LP/ SAF	LP/DF	692	N	50LP/40DF/10ES/SAF	90
200	10	2,3 4	0 10	T-1 P-3	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	NF	N	60GRASS/ 40DF	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
201	60	2,3 4	0 60	W-1 T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF	NF	N	70GRASS/ 30DF	0
202	10	2,3 4	0 10	W-1 T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF	NF	N	90GRASS/ 5LP/5SAF	90
203	8	2,3 4	0 8	W-1 T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	DF/NF	323	N	50DF/30LP/ 20GRASS	95
204	9	2,3 4	0 8	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	DF/LP/ NF	692/NF	N	40GRASS/ 30LP/30DF	95
205	39	2,3 4	0 39	W-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	DF/LP/ NF	692/NF	N	40GRASS/ 30DF/10SAF	0
206	29	2,3 4	0 29	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	NF/691	N	70GRASS/ 30DF	0
207	4	2,3 4	0 4	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	DF/NF	692/NF	N	50DF/ 50GRASS	0
208	13	2,3 4	0 13	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	NF/692	N	50GRASS/ 25DF/25LP	95
209	25	2,3 4	0 25	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/ SAF	NF/692	N	70GRASS/ 30SAF	0
212	16	2,3 4	0 16	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/ES	NF/692	N	50GRASS/ 50ES	0
215	149	2,3 4	0 149	M-1 T-1	Prescribed Fire	Slashing, Handpiling Burn Piles	N/A	N/A	NF/DF	NF/692	N	70GRASS/ 20DF/10SAF	0
216	7	2,3 4	0 7	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF	NF/692	N	85GRASS/ 15DF	0
217	41	2,3 4	0 41	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	DF/NF	690/NF	N	60DF/ 40GRASS	0
218	44	2,3 4	0 44	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	640/NF	N	40DF/ 30SHRUB/ 30GRASS	0

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
219	30	2,3 4	0 30	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	DF/NF	262	N	70DF/ 30GRASS	0
221	182	2,3 4	0 182	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	NF/323	N	60GRASS/ 35DF/5SAF	0
222	25	2,3 4	0 25	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	DF/NF	281/NF	N	50DF/ 50GRASS	0
223	28	2,3 4	0 28	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	NF/663	N	30GRASS/ 30SHRUB/ 20DF/20ES	0
224	32	2,3 4	0 32	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	NF/281	N	50GRASS/ 50DF	0
225	10	2,3 4	0 10	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	NF/470	N	60GRASS/ 40DF	0
227	32	2,3 4	0 32	T-1 M-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	NF/323	N	70GRASS/ 30DF	0
228	21	2,3 4	0 21	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/DF	NF/692	N	60GRASS/ 30DF/10LP	95
229	27	2,3 4	0 27	M-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	DF/NF	230	N	70DF/ 15SHRUB/ 15GRASS	0
230	11	2,3 4	0 11	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/LP	NF/692	N	40GRASS/ 40LP/20DF	95
231	7	2,3 4	0 7	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	NF/LP	NF	N	70GRASS/ 20LP/10SAF	90
232	10	2.3 4	0 10	T-1	Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	LP	692	N	75LP/ 25GRASS	95
233	23	2,3 4	0 23		Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	LP/NF	692/NF	N	50LP/ 30GRASS/ 20DF/ES	100
237	37	2,3 4	0 37		Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	LP	692	N	80LP/ 10GRASS/ 10SAF	80

Unit ID	Acres	Alternative	Alternative Acres	MA	Treatment Type	Prescription	Log Sys	Regen	Forest Type	Habitat Type	>40 Acre Openings (Alt)	Species Comp	% LP Mortality
238	5	2,3	0 5		Prescribed Fire	Slashing, Broadcast Burn	N/A	N/A	LP	692	N	90LP/ 10GRASS	95

Appendix B. Forestwide Standards, Forest Plan Consistency, and Management Area Direction

This appendix contains two tables. The first table displays the forestwide standards and forest plan consistency as it relates to this project. The second table displays the management area direction for the project.

Table B-1. Forestwide Standards and Forest Plan Consistency

Standard	If Standard applies, how is standard being met
Recreation	
1. New campgrounds and other developed recreation facilities, such as boat ramps or picnic areas, will generally not be constructed. Continue to maintain existing developed sites, but emphasize providing dispersed recreation opportunities. Removal of existing sites may be necessary, in some cases, due to site deterioration or excessive maintenance cost.	No new campgrounds or other developed recreation facilities are proposed with this project. The project area does not have any developed sites. Please refer to the Recreation Specialist Report for more information regarding recreation facilities/sites.
2. Encourage ski-touring trail development by locating and marking additional trails and by encouraging the private sector to develop trails.	Not applicable to the purpose and need for the project because no existing or proposed ski trails are located in the project area.
3. Complete a Recreation Opportunity Guide (ROG) for each Ranger District, to make recreation opportunities more visible to the public.	A Forest ROG was developed years ago but is no longer maintained. Recreation opportunities are currently posted on the Forest website.
4. A specific Continental Divide National Scenic Trail (CDNST) route will not be identified prior to approval of the comprehensive plan being prepared by the Forest Service and the Secretary of Agriculture's Advisory Council. Once the comprehensive plan is approved, the management direction will be incorporated further in this plan. Based on the Comprehensive Plan, a more detailed analysis will be completed to show trail segments, objectives and specific route locations. The legislation authorizing the CDNST specifically intended that the trail would not adversely affect or preclude the application of normal management practices on lands adjacent to or within the trail corridor (both public and private). It is not the intent of the legislation that a separate "management plan" be developed for the CDNST, but to provide for the development and management of the trail as a management practice which is integrated into the overall prescription for the land through which the trail passes.	The action alternatives would have a minimal short-term impact on non-motorized recreation opportunities in the area. The proposed treatments do not conflict with existing recreation direction for the project area, including Forest Plan direction. The majority of the 13 miles of trail in the area runs through the T-1 management area, where the emphasis is on cost-effective timber production and a management goal is to provide healthy timber stands. Project activities may disrupt some uses of the trail during implementation; the length of this disruption would be short-term.
5. Emphasize "Pack-In Pack-Out" use in dispersed recreation areas and in wilderness to reduce resource impacts and management costs.	This is done via Frontline, recreation Forest personnel and Forest website.
6. Provide information to users of remote areas and wilderness about potential conflicts with humans and bears and proper camping methods to avoid such conflicts.	This is done via Frontline, recreation Forest personnel and Forest website.
7. Outfitter and guide use will generally be maintained at a level determined from the highest 2 years of actual use experienced during the period l979 through l983. Application for additional or new use will be considered on a case-by-case basis, with consideration of resource limitations and public need.	Not applicable to the Telegraph Vegetation Project, because no outfitter and guide usage is proposed for consideration with this project.

Standard	If Standard applies, how is standard being met
Visuals	
1. A visual quality objective (VQO) is stated for each management area. These visual quality objectives provide the guidelines for altering the landscape. Portions of each management area may have a more or less restrictive VQO. Appendix B lists roads, trails, campgrounds, etc., that are within sensitive viewing areas. The VQO for these areas is noted in Appendix B. The VQO's for the Continental Divide National Scenic Trail will be the same as the Management Areas through which the trail passes.	The VQO for Management Areas T-1 and L-1 generally allow for maximum modification. The VQO for Management Area T-5 generally allows for modification. The VQO for Management Area M-1 is generally retention. The VQO for Management Areas W-1 generally allows for partial retention. Highway 12 and the Cromwell-Dixon Campground are listed as Sensitivity Level 1 which calls for retention in the Foreground and partial retention in the Middle ground and Background. The proposed activities for Alternatives 2, 3, and 4 would promote rehabilitation of the landscape improving natural visual characteristics in the long-term. Forest-wide standards for Insects and Disease provide direction to use silvicultural systems to: (1) improve species diversity and growth, and vigor for stands, and (2) increase the size diversity and class diversity between stands. The management activities proposed in this project are tools to rehabilitate the vegetative condition within the project area. Several large stands of dead trees would be removed, providing an opportunity to improve the species diversity, growth and vigor of the vegetation. The Visual Management System identifies rehabilitation as a short-term management alternative. “Landscape rehabilitation is used to restore landscapes containing undesirable visual impacts to a desired visual quality. It may not always be possible to immediately achieve the prescribed visual quality objective with rehabilitation, but is should provide a more visually desirable landscape in the interim” (USDA, 1974). The potential direct, indirect, and cumulative effects of the proposed activities to visual resources would be consistent with forest plan direction for visual resources because the application of the landscape rehabilitation management alternative as outlined in the VMS would allow a longer period of time for the retention VQO to be achieved. Refer to the Visuals/Scenery Specialist Report.

Standard	If Standard applies, how is standard being met
Cultural Resources	
1. The Forest will undertake a systematic program of cultural resource inventory, evaluation, and preservation aimed at the enhancement and protection of significant cultural resource values, as prescribed for Federal Agencies by Section 106 of the National Historic Preservation Act and 36 CFR 800. Cultural resource sites evaluated as significant will be preserved in place whenever possible. When such resources are threatened by project development, an effort to avoid or minimize adverse impact by project redesign will be made. When avoidance is judged by the Forest Supervisor to be imprudent or infeasible, the values of the site will be conserved through proper scientific excavation, recordation, analysis, and reporting. An inventory survey for cultural resources will be made for all significant ground-disturbing activities. Forest inventory efforts will be focused in three areas including: a. Areas where specific project activities, such as timber sales, road developments, range improvements, or mineral development activities, result in significant ground disturbance. b. Large areas where substantial development impact is anticipated, such as oil- and gas-planning areas. c. Areas where formal archaeological surveys may provide management data that are broadly applicable to ecologically similar areas and which will facilitate the development of predictive models capable of addressing issues of cultural site density, distribution, and significance. The Forest will encourage scientific research by privately funded universities as a means of acquiring additional inventory and interpretive data. Such projects will be coordinated with the State Historic Preservation Officer and the Advisory Council on Historic Preservation. Cultural resource site information is exempt from disclosure under the Freedom of Information Act. Following Forest Supervisor written approval, site location data may be released on a need-to-know basis to consultants, universities, or museums. Discovered cultural resources will be evaluated in relation to published Advisory Council on Historic Preservation (ACHP) criteria for eligibility to the National Register of Historic Places. Cultural resource sites determined eligible will be nominated to the National Register. The Forest will coordinate cultural resource issues and concerns with the appropriate Native American groups to ensure that Forest management activities are not detrimental to the protection and preservation of Native American religious and cultural sites, treaty rights, and religious and cultural practices. The Forest will enhance and interpret significant cultural sites for the education and enjoyment of the public when such development will not degrade the cultural property or conflict with other resource considerations. Known significant cultural resource sites on the Forest will be protected from inadvertent or intentional damage or destruction. Portions of the Lewis and Clark National Historic Trail are on the Helena Forest. Some interpretive signing has been placed along the trail. Normal management practices can still access land adjacent to or within the trail corridor, however, project activities will be conducted to minimize disturbance to the cultural site.	The requirement for cultural resource inventory in “areas where specific project activities ... result in significant ground disturbance” has been partially met by a series of previous investigations. Additional survey needs have been identified in this specialist’s report and would be completed prior to the ROD being signed. The HNF routinely avoids all known cultural resources, eliminating the need for National Register evaluations. This specialist report identifies the design features that the HNF would implement to preclude the need for eligibility determinations. A Forest commitment to additional inventory and avoidance of all known cultural resources, and field monitoring of project progress, would satisfy basic clauses outlined in this Standard.

Standard	If Standard applies, how is standard being met
Wildlife and Fish Indicator Species	
1. Populations of wildlife "indicator species" will be monitored to measure the effect of management activities on representative wildlife habitats with the objective of ensuring that viable populations of existing native and desirable non-native plant and animal species are maintained. See Chapter IV, part D Monitoring and Evaluation for specific monitoring requirements. Indicator species have been identified for those species groups whose habitat is most likely to be changed by Forest management activities. The mature tree dependent group indicator species is the marten; the old growth dependent group is represented by the pileated woodpecker and the goshawks; the snag dependent species group is represented by the hairy woodpecker; the threatened and endangered species include grizzly bear, gray wolf, bald eagle and peregrine falcon; commonly hunted indicator species are elk, mule deer and bighorn sheep; fish indicator species is the cutthroat trout.	Westlslope cutthroat trout (WCT) are an indicator species. Fisheries Biological Evaluation and Specialist Report for the Telegraph Vegetation Project would analyze and measures potential effects of the project this indicator species (westslope cutthroat trout). Monitoring element C7 focuses on pileated woodpeckers, among other species. Pileated woodpeckers were chosen as a management indicator species (MIS) because they were the largest primary excavator on the Helena National Forest. Pileated woodpeckers were also chosen as an MIS species because they have the most restrictive requirements in terms of snag size of any cavity nester on the Forest. *Forest Plan* Standards applicable to pileated woodpeckers are those that provide thresholds for snags. Out-year monitoring would occur in the project as part of *Forest Plan* monitoring specific to element C7. Monitoring element C7 focuses on northern goshawks, among other species. The northern goshawk was chosen as an MIS species for old growth due to the diverse prey base and nesting habitat commonly found in late-successional forests. Dispersion of late-successional habitat throughout the Forest was considered important for goshawks although recent science has shown that goshawks also make use of a wide variety of habitats so long as a diverse prey base is present along with mature trees for nesting. Out-year monitoring would occur in the project as part of *Forest Plan* monitoring specific to element C7. Monitoring element C7 focuses on hairy woodpeckers, among other species. Hairy woodpeckers have wide ecological amplitude in terms of nesting and foraging. Hairy woodpeckers are abundant across the Forest. *Forest Plan* Standards applicable to hairy woodpeckers are those that provide thresholds for snags. Out-year monitoring would occur in the project as part of *Forest Plan* monitoring specific to element C7. Monitoring element C8 focuses on martens. Martens were chosen as a management indicator species (MIS) because they are associated with mesic mature and late-successional forests. Specifically, they require at least 25% canopy cover and generally avoid large openings. Consequently, they are sensitive to management actions. Furthermore, because they are predators they are good indicators of ecosystem health due to their position on the food chain. According to the Forest Plan EIS, Appendix B (p. B/68), old growth requirements of the Forest Plan are intended to provide the minimum management requirements for several species including martens. *Forest Plan* Standards applicable to martens are those that provide thresholds for snags. Out-year monitoring would occur in the project as part of *Forest Plan* monitoring specific to element C8.

Standard	If Standard applies, how is standard being met
Big Game	
Big Game - 1. On important summer and winter range, adequate thermal and hiding cover will be maintained to support the habitat potential.	This standard is met. The analysis in the site-specific amendment concludes that elk population potential established in the Forest Plan would continue to be realized. When the Forest Plan Record of Decision was signed in 1986, the selected alternative was E-1. Alternative E-1 established Forestwide elk population potential for summer and winter range. In 1986, the Forest Plan summer range elk potential was 6,300 elk; the winter range elk potential was 4,000 elk. By decade 5, summer range elk potential in the Forest Plan was projected at approximately 6,200 elk and winter range elk potential at 3,200 elk (Forest Plan Record of Decision page 13, Forest Plan FEIS pages II/56-60). Based on aerial survey data collected by MFWP staff in 2014, there are over 11,000 elk Forestwide within those hunting districts for which a majority overlaps with the Forest. This is well in excess of that estimated at the time the Forest Plan was crafted and also in excess of that predicted for decade 5 (6,400 elk).
2. An environmental analysis for project work will include a cover analysis. The cover analysis should be done on a drainage or elk herd unit basis. (See Montana Cooperative Elk-Logging Study in Appendix C for recommendations and research findings on how to maintain adequate cover during project work.)	This standard is met. The cover analysis is completed at the elk herd unit scale. There are two herd units that overlap the project area: the Jericho and Spotted dog – Little Blackfoot herd units. Elk herd units were developed with Montana Department of Fish, Wildlife, and Parks. Refer to the Wildlife Specialist Report.
3. Subject to hydrologic and other resource constraints, elk summer range will be maintained at 35 percent or greater hiding cover and areas of winter range will be maintained at 25 percent or greater thermal cover in drainages or elk herd units.	Big game Standard 3 (HFP, p. II/17) requires that hiding cover on elk summer range be maintained at or above 35% (or, on in this case, 50% using the MFWP crown closure criterion). Hiding cover must be in blocks of at least 40 acres to be tallied as Forest Plan hiding cover. All action alternatives would result in the reduction of hiding cover but not to the extent that the Jericho and Spotted dog – Little Blackfoot herd units would fall out of compliance. Standard 3 also requires that thermal cover on winter range be maintained at or about 25% in blocks of at least 15 acres. Under Alternative 1, the Jericho herd unit fails to meet the thermal portion of this standard. The action alternatives would further reduce thermal cover on winter range. A site-specific exemption to the standard would be required for the action alternatives. Because this thermal cover will be lost by natural means in the next decade or so and because the action alternatives are not expected to negatively impact the elk population in HD 215, an exemption to the standard would not compromise the ability of the Forest to achieve elk population potential goals.

4. Implement an aggressive road management program to maintain or improve big game security. To decide which roads, trails, and areas should be restricted and opened, the Forest will use the following guidelines developed with the Montana Department of Fish, Wildlife, and Parks (MDFWP). The Forest visitor map will document the road management program.

Amended 4a. Road management will be implemented to maintain or improve big game security and hunting opportunity.

Road management will also be implemented to maintain or improve big game intermittent refuge areas.

This standard applies only to the National Forest System lands within those portions of the following elk herd units that are within the Helena Ranger District, Helena National Forest administrative boundary – Black Mountain-Brooklyn Bridge, Greenhorn, Jericho, Little Prickly Pear-Ophir, Quartz Creek, and Spotted Dog-Little Blackfoot.

Public Motorized Use: Public motorized use will be managed during the hunting season (from 9/1 – 12/1) to maintain elk security and intermittent refuge areas at the following levels:

Percentage of Elk Security and Intermittent Refuge Areas within that Portion of an Elk Herd Unit within the Helena Ranger District Administrative Boundary		
Herd Unit	**Security %**	**Intermittent Refuge Area %**
Black Mountain–Brooklyn Bridge	16%	5%
Greenhorn	30%	1%
Jericho	17%	0%
Spotted Dog - Little Blackfoot	41%	2%
Little Prickly Pear—Ophir	29%	2%
Quartz	0%	6%

Other Use: Administrative use for travel on routes that are closed to public motorized use is permitted subject to existing authorization procedures (i.e. variances approved by line officers are required prior to use of motorized routes closed to the public).

Temporary reductions associated with management activities in security blocks and intermittent refuge areas between 9/1 and 12/1 are allowed as long as impacts to elk or elk security are mitigated at the project level. Temporary reductions will be evaluated and effects analyzed (including cumulative effects) at the project level and reviewed by a wildlife biologist. It is at this scale and time when project design features and/or mitigations will be applied to ensure that impacts to elk or elk security during hunting season are addressed and reduced during implementation of the project. Temporary reductions are managed at the project scale and at the herd unit (or across herd units where security blocks cross into one or more herd units) to

Of note are the provisions for 'other use' and temporary reductions in security blocks. All of the action alternatives would involve use of roads that are closed to the public; these roads would be used for hauling timber. All of the action alternatives would also include construction of temporary roads. This road use would result in reductions in security during project implementation as follows: For Alternative 2, security would decrease from 17% to 12% in the Jericho FS EHU and from 41% to 36% in the Spotted Dog – Little Blackfoot FS EHU. For Alternative e, security would decrease from 17% to 13% in the Jericho FS EHU and from 41% to 37% in the Spotted Dog – Little Blackfoot FS EHU. And, For Alternative 4, security would decrease from 17% to 11% in the Jericho FS EHU and from 41% to 36% in the Spotted Dog – Little Blackfoot FS EHU. These temporary reductions are permitted providing mitigation measures are in place to minimize project activities.

The following mitigation measures would be applied to each action alternative:

1. The project area has been divvied into three areas for ease of implementation and to ensure that undisturbed areas are available to elk at any given time during project implementation. These are southwest, central, and northeast.

2. There are security blocks within each of these areas. Project activities would be completed in the shortest time frame possible.

3. Project activities would be limited to one operating season in total in security blocks in the respective area of the project between 9/1 and 12/1.

4. Activities within the central and northeast areas would be confined to a single drainage at a time within that area in order to minimize disturbance to elk. The southwest area of the project represents a single drainage so this mitigation measure isn't applicable.

5. Portions of the project would remain untreated to provide secure areas to which elk could displace during activities.

6. Use of firearms will be prohibited for anyone working within an area closed to the general public.

These mitigation measures should reduce project impacts on elk security. Several studies have documented that the displacement of elk associated with logging activities tended to be temporary with some elk returning during nights and weekends when logging activity was suspended (Beall 1976, Edge and Marcum 1985, Edge 1982 as cited in Lyon and Christensen 2002, p. 562). Other research found that logging activity did not significantly alter elk home range size (Edge et al. 1986) and that home range fidelity tended to retain elk in an area as long as extensive cover remained within the home range (Knight 1980, Hershey and Leege 1982, Edge et al. 1985). The aforementioned mitigation measures should reduce the distance elk need to travel to avoid disturbance associated with project activities and would increase the

Standard	If Standard applies, how is standard being met
ensure big game security during the 9/1 – 12/1 hunting season is maintained or improved over the long term. Cover Guidelines 1. Cover should be distributed in a manner that mimics or approximates a natural range of variation (NRV). NRV is generally defined as the spatial and temporal variation in ecosystem characteristics under historic disturbance regimes during a reference period. A reference period should be sufficiently long to include the full range of variation produced by dominant natural disturbance regimes. Fire, wind, and insect/disease outbreaks are examples of disturbances. 2. Subject to Guideline #1, provide cover, if available, between elk security areas to maintain habitat connectivity and facilitate seasonal movement. Saddles, low divides, and heads of drainages are examples of important landscape features within which cover should be retained when possible in order to provide habitat connectivity. 3. Subject to Guideline #1, vegetation management projects should be planned to recruit or improve cover, where such habitat is limited or not available. 4. Subject to Guideline #1, provide cover, if available, in elk security areas to maintain and/or improve elk security in areas known to be used by elk or that have the potential to be used by elk. The upper third of the slope in moderate to large drainages and lower third of slope in drainage heads are examples of areas that have the potential to be used by elk. 5. Frequent, continuous dense cover, if available, should be provided adjacent to system roads within and between elk security areas to maintain habitat connectivity and elk security. 'Dense' cover may include trees, shrubs, and/or topography among other factors and is site-specific in nature; as such it is purposefully not defined here. 6. Design management activities to avoid reducing hiding cover where recruitment of hiding cover is an objective.	probability of immediate return (Lyon et al. 1985). All action alternatives would be consistent with this standard. The action alternatives are also consistent with the cover guidelines. Cover in the project area is ubiquitous given the presence of dominance types - i.e. lodgepole pine, subalpine fir, Douglas-fir - that typically give rise to hiding cover, in particular. Cover has been retained between elk security areas to facilitate connectivity. Treatments in existing cover are concentrated in areas of high tree mortality associated with the mountain pine beetle. These treatments are designed to achieve understory regeneration in the quickest timeframe possible. Roadside cover would remain alongside some of the major motorized routes. Elsewhere, roadside cover would be limited due to treatments that abut these roads.
4b. Elk calving grounds and nursery areas will be closed to motorized vehicles during peak use by elk. Calving is usually in late May through mid-June and nursery areas are used in late June through July.	Forest Plan Standard 4(b) requires that elk calving grounds and nursery areas be closed to motorized vehicles during peak use by elk. This is usually from late May through July. While the project area has not been mapped by MFWP or the Helena NF as a calving ground/nursery area, some calving probably occurs around the meadows and heads of drainages in the project area. Elk with calves probably remain in the general area during the nursing period. A number of roads in and around the project area have been open to public vehicles for several decades without problems for calf production and survival. The temporary roads planned for the project would not be open to public use. Project operations would not occur during the calving season. If nursery sites are discovered during the course of the project, operations would be modified to avoid the sensitive areas. Both action alternatives would be consistent with this standard.

Standard	If Standard applies, how is standard being met
4c. All winter range areas will be closed to vehicles between December 1 and May 15. Exceptions (i.e., access through the winter range to facilitate land management or public use activities on other lands) may be granted.	Logging activities would be scheduled during the winter on winter range in order to ensure that soil quality standards for detrimental soil disturbance are met. A site-specific exemption to the standard would be required for any of the action alternative.
4d. At restricted roads, trails, and areas, signs will be posted which tell: 1. Type of restriction. 2. Reason for restriction. 3. Time period of restriction. 4. Cooperating agencies.	This standard is met. All restricted roads, trails, and areas are posted and continually reposted with this information. All roads that are constructed as a part of the project will be posted with the appropriate restriction.
4e. Roads that will be closed will be signed during construction or reconstruction telling the closure date and the reason for closure.	Some roads will be closed temporarily during timber harvest to provide for safety of the public and crews. These roads will be signed and will provide the dates and reason for closure.
4f. Enforcement is a shared responsibility. Enforcement needs will be coordinated with the MDFWP.	This standard is met as enforcement is coordinated with MDFWP.
4g. Opened Forest roads will normally have a designed speed of less than 15 miles per hour. Exact design speeds will be determined through project planning. Loop roads are not recommended and will be avoided in most cases.	This standard is met. No loop roads are proposed with this project.
4h. The Forest Road Management Program will be developed in conjunction with MDFWP and interested groups or individuals. The Road Management Program will contain the specific seasonal and yearlong road, trail, and area restrictions and will be based on the goals and objectives of the management areas in Chapter III of the Forest Plan.	This standard is met. Several miles of roads closed through the Divide Travel Plan decision would be decommissioned in Alternative 3 and 4. Otherwise Telegraph Vegetation Project does not propose any changes to the current Forest's road management program.
4i. Representatives from the Helena Forest and MDFWP will meet annually to review the existing Travel Plan.	This standard is not applicable because the Telegraph Vegetation Project does not propose any travel management changes. Annual meetings with MDFWP is out of the scope of the project, however, roads within the project area along with other forest roads will be reviewed annually with MDFWP.
5. On elk summer range the minimum size area for hiding cover will be 40 acres and the minimum size area on winter range for thermal cover will be l5 acres.	Thermal and hiding cover have been modeled according to the Criteria for Wildlife Models Helena National Forest that specifies patch size as 40 acres for hiding cover and 15 acres for thermal cover.
6. Montana Cooperative Elk-Logging Study Recommendations, in Appendix C, will be followed during timber sale and road construction projects.	Forest Plan Standard 6 (Forest Plan II/19 and C/1 -11) requires that the recommendations embodied in the Montana Cooperative Elk-Logging study (Appendix C of the Forest Plan) be followed during timber sale and road construction projects. There are a total of eleven recommendations some of which have been incorporated as design features as previously described. The following discussion describes the project's consistency with each of the eleven recommendations. 1. Security during logging operations – The action alternatives are consistent with this recommendation. Design features have been incorporated that confine logging to a single drainage at a time to minimize disturbance to

Standard	If Standard applies, how is standard being met
	elk. Also, logging activities will be completed in the shortest time frame possible. Use of firearms will be prohibited for anyone working within an area closed to the general public. 2. Redistribution of elk – The action alternatives are consistent with this recommendation which requires that timber sales be planned in a manner that does not redistribute elk onto adjacent or nearby property. Management challenges associated with HD 215 do include redistribution of elk to private land (MFWP 2005, pp. 190-193). The redistribution of elk that is currently occurring in HD 215 would not be exacerbated by the action alternatives. 3. Traditional home range use by elk – This recommendation is intended to ensure that timber harvest and road construction are planned to minimize impacts to elk and elk hunting. The action alternatives are consistent with this recommendation since all temporary roads will be closed to the public during logging operations and decommissioned post-implementation. 4. Road construction and design – This recommendation is intended to maintain the integrity of elk movement patterns and provide security for unimpeded movement. The action alternatives are consistent with this recommendation in so far as security either remains the same post-implementation, and all temporary roads will be closed to the public during implementation and decommissioned afterwards. There may be some temporary disruption to traditional movement patterns; however, ample blocks of unroaded areas exist that will provide alternative travel ways. 5. Road management – This recommendation is also intended to maintain elk security through management of road densities. Implementation of the action alternatives does not affect open road placement. 6. Area closures during the hunting season – This recommendation is intended to ensure that travel restrictions are carefully considered relative to elk management objectives so that hunting opportunities aren't unnecessarily impacted. This recommendation is not applicable to the Telegraph project. 7. Clearcuts – This recommendation is intended to ensure that forage produced through clear-cutting is available to elk. The action alternatives are consistent with these considerations since slash clean up inside clearcuts would be reduced to less than 1.5 feet and all temporary roads will be closed to the public. Openings would be generally less than 100 acres. However, in order to meet the purpose and need for the project, some treatment units are greater than 100 acres. This is to address the mortality in lodgepole pine stands associated with the mountain pine beetle. A site-specific amendment would be needed for all the action alternatives. 8. Cover type – This recommendation is intended to ensure that cover types, important to elk, are considered during planning and implementation of silvicultural practices. The action alternatives are consistent with this

Standard	If Standard applies, how is standard being met
	recommendation since cover type data are available Forestwide (via R1-VMap) and have been utilized for the Telegraph project to identify cover and forage. 9. Moist sites – This recommendation is intended to ensure that the integrity of moist sites is maintained since these areas comprise important components of elk habitat. Design features have been developed to retain green trees, standing snags, and coarse woody debris in and around the fringes of those sites that occur in treatment units. This should preserve their utility for elk and other wide-ranging species as well as for smaller resident mammals, birds, and amphibians. The action alternatives are consistent with this recommendation. 10. Elk/cattle relationships – This recommendation is intended to ensure that forage that may be created as a result of timber harvest remain available to elk. The action alternatives are consistent with this recommendation since cattle and elk currently comingle where they overlap. 11. Winter range – This recommendation states that timbered areas adjacent to primary winter foraging areas should be managed to maintain the integrity of cover and timber harvest should be scheduled outside of the winter period. There are some treatment units within which winter logging in winter range is proposed under the action alternatives. Implementation therefore would require a site-specific amendment to allow the project to proceed. As indicated, two of the 11 elk logging study recommendations would need a site-specific exemption in order for the project to proceed. Despite this amendment and its anticipated impacts to elk, elk populations within the project area and across the Forest as a whole should continue to remain robust. Elk are fairly resilient animals. Ernest Thompson Seton (as cited in RMEF 1997) postulated that 10 million elk lived in North America prior to European settlement. By 1907, there were less than 100,000. In Montana, elk were widely distributed during the era of exploration. As Montana was 'settled', elk began to decline were completely eliminated from eastern Montana by the early 1900s. Today, elk are abundant; their ability to withstand near extirpation at the turn of the last century strongly suggests that they can withstand large openings in an otherwise dead forest and minor disturbances on winter range.
7. Inventorying and mapping important big game summer/fall and winter ranges will continue.	The Helena National Forest Wildlife Staff continue to work with Montana Fish, Wildlife, and Parks Area Biologist to update our big game range maps. Inventory is ongoing as part of project-level analyses.
8. Any proposed sagebrush reduction programs will be analyzed on a case-by-case basis for the possible impact on big game winter range.	This standard does not apply. The Telegraph Vegetation Project does not propose any reduction in sagebrush.

Standard	If Standard applies, how is standard being met
9. Occupied bighorn sheep and mountain goat range will be protected during resource activities. Project plans for livestock, timber, or other resource development will include stipulations to avoid or mitigate impacts on their range. Conflicts between livestock and these wildlife species will be resolved in favor of the big game.	This standard does not apply to the Telegraph Vegetation project as bighorn sheep and mountain goats are not present in the project area.
10. Moose habitat will be managed to provide adequate browse species diversity and quantity to support current moose populations.	Effects to moose are addressed through the discussion of effects to Riparian habitat. Treatments that mimic disturbance processes (as is the case of this project) in wetlands and riparian zones are important in maintaining species richness and diversity, both plant and animal. The action alternatives are consistent with this standard.
Threatened and Endangered (T&E) Species	
1. A biological evaluation will be written for all projects that have potential to impact any T&E species or its habitat. All evaluations will address each projects potential to adversely modify a listed species habitat or behavior. If an adverse impact is determined, mitigation measures will be developed to avoid any adverse modification of a listed species habitat or behavior. If all possible mitigation measures do not result in a no effect determination, then informal and/or formal consultation with the U.S. Fish and Wildlife Service will be initiated.	A biological evaluation (assessment) will be prepared for this project to assess impacts to both aquatic and terrestrial T&E species. Since mitigation measures do not result in a “no effect” determination, informal and/or formal consultation with the U.S. Fish and Wildlife Service will be initiated. The biological evaluation of terrestrial wildlife species for the Telegraph project occurs throughout the body of the wildlife report wherever the different species of concern are addressed. These include in detail 2 threatened species (lynx and grizzly bear) and one sensitive species (wolverine). The remaining species are either briefly discussed in the Topics not Analyzed in Detail section or are not present in the project area. Table 103 in the wildlife report summarizes the key aspects of the evaluation. No T&E plant species are known or suspected in the project area.

Standard	If Standard applies, how is standard being met
2. **Grizzly bear** -- Apply the guidelines in Appendix D to the Management Situation 1 and 2 (referred to essential and occupied prior to 1984) grizzly bear habitat on the Forest (see map in Appendix D). Initiate field studies in undesignated areas known to be used by grizzlies, to determine if the areas should be designated as grizzly habitat. Until sufficient evidence is available to determine the status of these areas, manage them according to Appendix E, Grizzly Management Guidelines Outside of Recovery Areas.	The project area is not in Management Situation 1 and 2. Therefore, this part of the standard does not apply to the Telegraph Vegetation project. At this time, the size of the local grizzly population is unknown and its status uncertain. All that can be said, based on field observations to this point, is the following: • Population density is very low (only 5 verified occurrences in the general area 2004-2012—although several additional observations are highly credible). • Reproduction is uncommon (4 reports of a sow with cubs since 1991). • The stability and persistence of the current population may be tenuous (since the presence of grizzlies may be indicative of a linkage zone with transient individuals rather than an incipient Biological Activity Center) (*HFP,* Appendix E). South of U.S. Highway 12, most observations have come from the upper reaches of the Little Blackfoot watershed and along the border between the Helena NF and the Beaverhead-Deerlodge NF (including the upper Cataract and Basin Creek drainages just to the south). The number of credible grizzly bear reports in these areas has been increasing in recent years as the population in the NCDE expands to the point that more bears are exploring new territory further to the south (J. Jonkel, personal communication, 2007). Be that as it may, recent monitoring efforts designed to identify individual grizzlies through DNA analysis of hair samples collected from rub trees (2009-2010) have yet to turn up any sign of the bears south of Highway 12—a further indication of their scarcity in this area. At this time, the project area is not considered a biological activity center (BAC) because the following criteria for a BAC have not been met: Observations [of grizzly bears] must include females with cubs or yearlings at least 5 of the 10 years.
3. In occupied grizzly habitat, to minimize man-caused mortality the open road density will not exceed the 1980 density of 0.55 miles per square mile, which was determined to have little effect on habitat capability.	This standard does not apply to the Telegraph Vegetation Project because the project area is outside occupied grizzly bear habitat as defined in the Helena National Forest Plan Appendix D.
4. Research activity on grizzly bears or their habitat will be reviewed by the Research Subcommittee of the Interagency Grizzly Bear Committee.	Not applicable at this time. Currently, there is no ongoing research on grizzly bears in the project area so this standard is not applicable.

Standard	If Standard applies, how is standard being met
5. **Bald Eagle and Peregrine Falcon** -- Continue working with the MDFWP, the USFWS, and the BLM to identify nesting and wintering areas. Identify nesting territories and roosting sites, and protect both from adverse habitat alteration. (Guidelines for how to identify bald eagle habitat are in the Wildlife Planning Records.) Powerlines constructed within bald eagle or peregrine falcon habitat will be designed to protect raptors from electrocution. See Appendix D for bald eagle and peregrine falcon habitat maps.	This standard is met because there are no known bald eagles and peregrine falcons nesting territories and/or roosting sites in the project area. Falcon eyries are located on high cliffs, often near water. Peregrine falcons were extirpated from the Divide landscape in the mid-20th century, and no new occupied eyries have been located in the landscape since the falcons have become re-established in and around the Helena NF (almost entirely in the Big Belt Range) in the early 1990s. No active bald eagle nests have been located on HNF lands in the Divide landscape since the rejuvenation of local eagle populations over the last 3 decades. All known nests near the landscape are in the Little Blackfoot drainage on private land to the west. Most resident eagles on the Forest are located along the Missouri River in the Big Belt Range and along the Big Blackfoot River.
6. **Gray Wolf** -- With the USFWS and MDFWP, investigate reported gray wolf observations to confirm or deny gray wolf presence. If presence of gray wolf is confirmed, determine if the habitat is necessary for the wolf's recovery. If the habitat is necessary, coordinate with the MDFWP and the USFWS to implement the Wolf Recovery Plan. See Appendix D for gray wolf habitat map.	Wolves have recently been delisted based on achievements of recovery goals. Wolves may occur in the project area and are analyzed in the Wildlife Specialist Report. This standard is not applicable because the wolf has been recovered.
7. No known threatened or endangered plants are on the Helena National Forest.	This standard is being met. No T&E plant species are known or suspected in the project area.

Standard	If Standard applies, how is standard being met
8. **Species of Special Concern** There are habitats on the Forest where the following species of special concern may be found (Plant Species of Special Concern, USDA-FS, l980) Lemhi penstemon (*Penstemon lemhiensis*), Howell's gumweed (*Grindelia howellii*), Missoula phlox (*Phlox missoulensis*), Cliff toothwort (*Cardamine rupicola*). Missoula phlox and cliff toothwort have been located on the Helena Forest. Other Plants that are termed rare have also been located on the Helena Forest. They are Klaus' bladderpod (*Lesquerella plausii*) and Long-styled thistle (*Cirsium longistylum*). Two additional rare plants, Moschatel (*Adoxa moschalellina*) and Lesser rushy milkvetch (*Astragalus connvallarius*) are believed to occur on the Helena Forest but currently have no occurrence records. If any of these species are verified on the Helena Forest, appropriate measures, pursuant to Section 7 of the Endangered Species Act, will be taken.	After completion of the Forest Plan in 1986, the Regional Forester designated sensitive plant species for Region 1 and has periodically updated the list. The current Region 1 sensitive species list was updated in 2011. Wavy moonwort (Botrychium crenulatum), Peculiar moonwort (Botrychium paradoxum), Hall's rush (Juncus hallii), Whitebark pine (Pinus albicaulis), Missoula phlox (now called Phlox kelseyi var. missoulensis instead of P. missoulensis) and Austin knotweed (Polygonum douglasii ssp austiniae) are still designated sensitive species and are known or suspected to occur on the Helena National Forest and in the project area. Any known or discovered Species of Special Concern and species on the Region 1 Forester's sensitive species plant list individuals will be protected with the appropriate design features. Lemhi penstemon (Penstemon lemhiensis) and moschatel (Adoxa moschatellina) are also currently sensitive species, but are not known to occur, nor are they suspected to occur, on the Helena National Forest. Cliff toothwort (Cardamine rupicola), Klaus' bladderpod (Lesquerella klausii), long-styled thistle (Cirsium longistylum), and rushy milkvetch (Astragalus convallarius) are not currently designated sensitive species for the Northern Region. Howell's gumweed (Grindelia howellii) is not known or suspected to occur within the project area. The Forest Plan direction for Species of Special Concern is general, and updated Regional direction has been given concerning sensitive species, which includes Species of Special Concern.
Old Growth	
An old growth stand is generally characterized by a high level of standing and down, dead and rotting woody material; two or more levels of tree canopies and a high degree of decadence indicated by heart rot, mistletoe, dead or broken tree tops, and moss. Five percent of each third order drainage should be managed for old growth. The priority for old growth acres within each drainage is: first, land below 6,000 feet in elevation; second, riparian zones and mesic drainage heads; and third, management areas emphasizing wildlife habitat. These areas will normally be managed on a 240-year rotation and will range from 10 acres to several hundred acres. Management areas other than T-1 through T-5 will be the primary source for old growth. However, if adequate old growth area cannot be achieved then the T management areas will be considered to meet old growth objectives.	This standard applies and is being met with all Alternatives. Approximately 5 percent of each of the third order drainages associated with the project have been designated for old growth management. The designation protocol included consideration of all the priority criteria listed by this standard. No old growth would be treated with the action alternatives. Refer to the Habitats of Special Concern Report. Please also refer to the project file for detailed information regarding old growth designation protocols (USDA 2012c, HNF Old Growth Process).
Snags	
1. To keep an adequate snag resource (standing dead trees) through the planning horizon, snags should be managed at 70 percent of optimum (average of 2 snags/acre) within each third order drainage.	This standard applies and is met with all Alternatives. There would be snags well in excess of this level in each third order drainage. See Habitats of Special Concern Specialist Report.

Standard	If Standard applies, how is standard being met
2. Snag management guidelines need not be applied within a quarter mile of riparian areas, because riparian standards should provide for adequate snags.	This standard applies and is being met because riparian standards are being followed with all Alternatives.
3. Larch, ponderosa pine, Douglas-fir, spruce, and subalpine fir, in that priority, are the preferred species for snags and replacement trees (live trees left to replace existing snags).	This standard applies and is met, although very few snags of the priority species are available. Lodgepole is not specified as a desirable snag species. See Habitats of Special Concern Specialist Report.
4. Management areas other than T-1 should be the primary source for snag management. However, if adequate snags cannot be found outside of T-1, then the following numbers and sizes of snags should be retained in cutting units, if available. A. In units with snags, keep a minimum of 20 snags and 10 replacement trees per 10 acres, if available. If 20 snags are not available, then any combination totaling 30 should be left, by the following dbh classes: 13 snags and 6 replacement trees from 7 to 11 inches 5 snags and 3 replacement trees from 12 to 19 inches 2 snags and 1 replacement trees 20+ inches B. In units--except those of pure lodgepole--without snags keep a minimum of 30 wind firm trees per 10 acres, if available, by the following dbh classes: 21 trees from 7 to 11 inches 7 trees from 12 to 19 inches 2 trees from 20+ inches If wildlife funds are available, a third of the replacement trees should be girdled or otherwise killed to provide snags, by the following dbh classes: 7 trees from 7 to 11 inches dbh 2 trees from 12 to 19 inches dbh 1 tree from 20+ inches dbh	This standard applies and is being met with all Alternatives. No snags would be cut under the No Action with the exception of ongoing public firewood gathering. Snags are available across multiple management areas in the project area. In all action alternatives, snags are primarily provided for outside of treatment units, although snag retention guidelines are prescribed. Also, replacement snags would be provided by green trees of species other than lodgepole that would be retained to the extent possible in regeneration harvest units; and to the desired density of generally the largest and healthiest trees available in intermediate harvest units. Refer to the Forested Habitats of Special Concern Specialist Report.
Fisheries	
1. Maintain quality water and habitat for fish by coordinating Forest activities and by direct habitat improvement (see Forest Wide Standards for riparian).	Sediment impacts to fisheries under the action alternatives analyzed for this project would be limited to 3 - 5 years and will be partly offset through mitigation (road improvements and culvert replacement). A summary of project impacts is included in the Fisheries Report.
2. Instream activities should allow for maximum protection of spring and fall spawning habitats.	Standard would be met. Instream structures would be limited to existing culvert replacement. BMPs would be in place to minimize impacts to and fish bearing habitat. A summary of design features are included in the Assumptions section of the Fisheries Species Report.

Standard	If Standard applies, how is standard being met
3. Structures installed within streams supporting fisheries will be designed to allow upstream fish movement, especially to spawning areas.	Standard would be met. Instream structures would be limited to existing culvert replacement. Several existing culverts will be replaced as part of this project. All new culverts will be designed to pass the 100-year flood and provide upstream fish movement. Three of the culverts will replace known barriers to fish movement. BMPs would be in place to minimize impacts to and fish bearing habitat. A summary of design features and mitigation measures are included in the Assumptions section of the Fisheries Report.
Range	
1. Riparian condition within livestock allotments will be mapped and become part of the Allotment Management Plan.	Standard does not apply to the Telegraph project.
2. Where analysis shows range resource damage, the cause will be identified and corrective action will be initiated through an allotment management plan.	Standard does not apply to the Telegraph project.
3. Chemical spraying should not be used on sagebrush control projects if other control methods are feasible.	Standard is being met. No chemical control of sagebrush is planned for the Telegraph project.
4. Best Management Practices (BMPs) will be used to minimize livestock damage to lakeside soils, streamsides, and other fragile areas.	Standard does not apply to the Telegraph project.
5. Allotment management plans will specify the utilization standards of key plant species needed to protect the soil and water quality. Allowable forage utilization of these plants should be based on local range conditions, soil stability, and known individual plant requirements. The guides for allowable utilization of key species, by condition classes, are in the Range Management Handbook (FSH 2209.21).	Standard does not apply to the Telegraph project. There is no suitable range in the project area.
6. Allotment Management Plans will be developed using the interdisciplinary process.	Standard does not apply.
Noxious Weeds	
1. Implement an integrated weed control program in cooperation with the state of Montana and County Weed Boards to confine present infestations and prevent establishing new areas of noxious weeds. Noxious weeds are listed in the Montana Weed Law and designated by County Weed Boards.	This project incorporates the Helena National Forest Weed Control program. The Helena National Forest Noxious Weed Vegetation Treatment Environmental Impact Statement (USDA Forest Service 2006b) is part of the project file. Addressed by unit and species in design features and mitigations.
2. Integrated Pest Management, which uses chemical, biological, and mechanical methods, will be the principal control method. Spot herbicide treatment of identified weeds will be emphasized. Biological control methods will be considered as they become available.	This analysis considers integrated pest management with the estimates of weed spread and control. The Helena National Forest Noxious Weed Vegetation Treatment Environmental Impact Statement (USDA Forest Service 2006b) is part of the project file. Addressed by unit and species in design features.
3. Funding for weed control on disturbed sites will be provided by the resource which causes the disturbance.	This document is not the place to determine how funding will be provided.
Revegetation	
1. Seeding will be done in a timely manner on disturbed areas, to prevent erosion and to achieve best revegetation results.	Re-vegetation is built into the project as project design features.

Standard	If Standard applies, how is standard being met
2. Seeding mixtures of native plants (naturally occurring) should be used, if practical, in all revegetation projects greater than two acres. On smaller disturbances, the responsible official may authorize the use of exotic species.	Recommended certified weed seed free native seed mixtures are included.
3. Seeding guidelines, based on elevation, soil type, parent material, habitat type, and reasonable cost, are listed in Appendix F.	Recommended certified weed seed free native seed mixtures that meet the seeding guidelines are included.
Timber	
1. Silvicultural examinations and prescriptions will be required before any timber manipulation or silvicultural treatment takes place. Exceptions include cutting of trees that block vision along roads, cutting hazard trees, clearing right-of-way, clearing for mineral development, minor and incidental amounts of free use, and cutting personal firewood. Final determination of what silvicultural system will be used for a particular project will be made by a certified silviculturist after an on-the-ground site analysis. This site specific analysis will determine the appropriate even or un-even age silvicultural system that best meets the goals and objectives of the management area. Standards for applying all silvicultural systems, as well as supporting research references are in the Northern Region guide (June 10, 1983). In addition, broad guidelines are found in Appendix H and M. Even aged management methods will be used only where it is determined to be appropriate to meet objectives. Clearcutting will be used only where it is the optimum method.	The standard does not apply to the No Action alternative since no treatments would occur. The standard applies and is met with the Action Alternatives (Forested Vegetation Report). Site specific prescriptions would be completed by a certified silviculturist prior to implementation. Field visits, stand examinations, and FIA intensified grid plots have been conducted within the project area to inform the analysis. Where prescribed, clearcutting has been determined to be the optimum method based on extensive mountain pine beetle-caused tree mortality. Prescriptions utilize a variety of timber harvest and prescribed fire systems described in detail in the Forested Vegetation Specialist Report.
2. Tree improvement will be conducted in accordance with the current Regional and Forest level tree improvement plans.	Standard is met on the HNF but does not apply to this project – there are no tree improvement activities associated with the proposed action.
3. Transportation plans and logging systems must be designed jointly to provide for long-term stand management, with full consideration given to topography and slope, the overall economic efficiency of roading and yarding costs, and the needs of other resources.	This has been completed as part of the design of the proposed action and subsequent action alternatives. It is located in the project record.
4. Timber stand openings created by even-aged silvicultural systems will normally be 40 acres or less. Creation of larger openings will require a 60-day public review and Regional Forester approval. Exceptions are listed in the Northern Regional Guide.	The standard does not apply to the No Action Alternative, but does apply and is met by the Action Alternatives. Openings over 40 acres would be created but exceptions to the Regional Forester approval process apply due to insect-caused mortality. Refer to Forested Vegetation Specialist Report.
5. A feasibility analysis of each sale over one million board feet will be made to assure that it has been designed with the most cost-effective measure possible in keeping with environmental concerns. This analysis will examine strategic items in the sale design process to assure consideration of economic impacts of these items on the sale value. A cash flow analysis will be done to determine the viability of the sale with current market conditions. If anticipated costs are higher than predicted high bids, consider the following: a. Defer the sale until economic conditions would indicate receiving higher bids. b. Proceed to sell the timber and provide proper documentation that benefits, other than immediate monetary return from the timber, are of importance.	This has been completed and it is documented in the economic specialist report for the Telegraph Vegetation project. All alternatives appear to be financially feasible; however as forest products continue to deteriorate estimated values may continue to decline.
Firewood	

Standard	If Standard applies, how is standard being met
1. The Helena Forest will generally charge a fee for personal use firewood. The Regional Office will annually determine the fee. Designated free firewood areas will continue only as long as demand is less than supply.	Not applicable to the Telegraph Vegetation Project because the project does not have any free firewood areas.
2. Logging areas will be open to public firewood gathering after the sale is closed and prior to burning logging debris and closing roads, if wood is available and other resource values, such as wildlife snags, downed logs, and soils, can be protected.	This standard applies and is met. See chapter two of the FEIS, Design Features Common to Action Alternatives.
3. Promote a green firewood program where desirable for resource management for both commercial and private firewood gatherers.	Not applicable to the Telegraph Vegetation Project because green firewood permits are not proposed.
4. The public will be informed of firewood gathering opportunities through the local media. Maps and directions to firewood gathering areas will be available at FS offices.	Map and directions to treatment units with firewood opportunities will be made available at Forest Service offices.
5. Permits will be required whenever tractors, rubber-tired skidders, jammers, or other yarding equipment normally used by the logging industry are used for yarding firewood.	Not applicable to the Telegraph Vegetation Project because no equipment would be allowed for yarding firewood.
6. Providing firewood will be emphasized as a slash treatment method.	This standard applies and is met. See chapter two of the FEIS, Design Features Common to Action Alternatives.
Water, Soil, and Air - Municipal Watershed Guidance	
1. Municipal watersheds will be managed under multiple-use concepts and direction. Management area guidelines will identify permissible land uses, restrictions on land uses, and special measures required to ensure a high quality and quantity municipal water supply. Presently, there are two municipal watersheds on the Forest, Tenmile and McClellan.	Not applicable to the Telegraph Vegetation project because there are no municipal watersheds located within the project area.
2. Design and implementation of projects within the watershed will be guided by FSM 2542.12, as well as specific management area standards and guidelines.	Not applicable to the Telegraph Vegetation project because there are no municipal watersheds located within the project area.
3. An environmental analysis will be prepared in coordination with the concerned municipality and the State Water Quality Bureau for each new project proposed within the municipal watershed which could potentially result in degradation of water quality.	Not applicable to the Telegraph Vegetation project because there are no municipal watersheds located within the project area.
4. Each project implemented in the municipal watersheds will have a designated Forest Service representative responsible for maintenance of water quality within appropriate state standards. Each contractor will designate a representative, who will normally be at the project site, with the authority to take whatever action necessary to remedy any situation which might result in violation of state water quality standards.	Not applicable to the Telegraph Vegetation project because there are no municipal watersheds located within the project area.
5. Plans and specifications for projects proposed for municipal watersheds will be coordinated with the municipality involved and submitted to the Montana State Department of Health and Environmental Sciences for review and approval as required by Montana Laws regarding public water supply as amended by Chapter No. 556, l979, 75-6-112.	Not applicable to the Telegraph Vegetation project because there are no municipal watersheds located within the project area.
General Watershed Guidance	
1. Coordination with the State of Montana, as required by the Clean Water Act (33 CFR §208), concerning stream channels and water quality protection.	This standard is met. A copy of the Telegraph Vegetation project FEIS has been sent to the State of Montana. Furthermore, all required state permits will be obtained prior to implementation of the project.

Standard	If Standard applies, how is standard being met
2. Watershed improvement projects will be identified, prioritized, and developed on a watershed basis (see Appendix T of the Forest Plan).	Watershed improvements are proposed under each alternative which potential benefits were analyzed at watershed scale.
3. A project which causes excessive water pollution, undesirable water yield, soil erosion, or site deterioration will be corrected where feasible, or the project will be re-evaluated or terminated.	Based on the analyses done in the Telegraph Vegetation Hydrology report to evaluate measurement indicators related to hydrology, the actions proposed would not cause excessive water pollution, undesirable water yield, soil erosion or site deterioration.
4. Projects involving significant vegetation removal will, prior to including them on implementation schedules, require a watershed cumulative effects feasibility analysis to ensure that water yield or sediment will not increase beyond acceptable limits. The analysis will also identify opportunities, if any exist, for mitigating adverse effects on water-related beneficial uses.	Increases in sediment delivery related to treatment units will be partly offset through mitigation (road improvements and culvert replacement). A summary of project effects is included in the Fish BE and Specialist Report.
5. Practices in the Soil and Water Conservation Practices Handbook (FSH 2509.22) developed cooperatively by the State Water Quality Agency and the Forest Service will be incorporated, where appropriate, into all land use and project plans as a principal mechanism for controlling non-point pollution sources and meeting soil, State water quality standards and other resource goals.	Practices in the Soil and Water Conservation Practices Handbook have been incorporated, where appropriate, into the proposed project.
6. Water rights for non-consumptive water uses (instream flows) necessary to maintain fisheries habitat, recreational uses, or other beneficial water uses will be claimed for appropriate waterbodies and streams.	Not applicable to the Telegraph Vegetation project because non-consumptive water uses is not a part of the purpose and need for the project.
7. An environmental analysis, following the process in FSMs 2526 and 2527, will be made for all management actions planned for flood plains, wetlands, riparian areas, or bodies of water prior to implementation. This analysis will determine the short- and long-term adverse impacts and mitigating measures associated with the planned management actions.	The analysis in the Fish BE and Specialist Report determines the short- and long-term adverse impacts and mitigating measures associated with the planned management actions.
8. Water transmission lines, dams, and hydro-meteorological data sites will be maintained by the permittee in a safe and serviceable condition. Unsafe or unserviceable facilities will be repaired to approved engineering standards or removed from service.	Not applicable to the Telegraph Vegetation project because there are no water facilities or permittees located in the area that pertain to this project.
9. Activities that might affect the validity of data collected at hydro-meteorological data sites will be coordinated with the permittee or cooperating agency before implementation of the project.	Not applicable to the Telegraph Vegetation project because there are no water facilities or permittees located in the area that pertain to this project.
10. Applications for hydropower, water diversion, water storage, or other water-related facilities will be evaluated on a case-by-case basis. The applicant may be required to use private consultants or other personnel to make environmental studies needed by the Forest Service and/or state agencies for evaluation of the proposal. Close coordination and cooperation with other agencies where appropriate will be sought.	Not applicable to the Telegraph Vegetation project because there are no water facilities or permittees located in the area that pertain to this project.
11. Instream flows adequate to protect the aquatic environment will be maintained during any project which removes water from any stream.	Not applicable to the Telegraph Vegetation project because the project does not propose to remove water from any stream.
Airshed Guidance	
1. Management activities that affect air quality will comply with Federal and state standards and the Montana Cooperative Smoke Management Plan. (The Plan is part of Fire Planning Records.)	Implementation of any action alternative would be compliant with the Forest Plan because all prescribed fire operations must comply with Federal and State standards and the Montana Cooperative Smoke Management Plan.

Standard	If Standard applies, how is standard being met
2. Protect air quality by cooperating with Montana Air Quality Bureau in the Prevention of Significant Deterioration (PSD) program and State Implementation Plan (SIP).	Regardless of no action, any Forest Service treatments either ongoing or planned will be required to adhere to air quality standards and direction as outlined in the Forest Plan.
Soil Guidance	
1. In accordance with NFMA, RPA, and Multiple Use-Sustained Yield Act, all management activities will be planned to sustain site productivity. During project analysis, ground disturbing activities will be reviewed and needed mitigating actions prescribed.	The Telegraph Vegetation Project complies with Forest Plan soil guidance because effects from soil disturbance would not be an irreversible commitment of resources and thus would not cause permanent impairment of the productivity of the land in accordance with MUSY, RPA and NFMA. In addition, proposed ground disturbing activities have been reviewed for the Telegraph Vegetation Project and necessary design features have been prescribed.
2. Areas of decomposed granite soils will be identified and erosion control measures planned prior to any ground disturbing activities.	Granitic soils have been identified in the project area and the design features prescribed above have been prescribed to minimize erosion.
3. To reduce sedimentation associated with management activities, the highly sensitive granitic soils, which cover about 20 percent of the Forest, will have first priority for soil erosion control.	Granitic soils have been identified in the project area and the design features prescribed above have been prescribed to minimize erosion.
Minerals General	
1. The 1964 Wilderness Act stipulates that effective December 31, 1983, no further mineral entry would be permitted in existing wilderness areas. This includes leasing for oil and gas, applying for patent on existing claims, and staking new claims. However, citizens' rights to enter public land for prospecting or working valid existing claims are unchanged.	NA – Project area does not include wilderness
2. Areas withdrawn from mineral entry should be reevaluated every five years in accordance with Federal Land Policy and Management Act (FLPMA) to determine if the withdrawal is still necessary. (See Appendix Q.)	Standard being met because no areas are being withdrawn from mineral entry.
3. Access for development of locatable and leasable minerals will be allowed on a case-by-case basis. Access should be directed toward minimizing resource impacts and be coordinated with other land uses.	Standard being met because access is not being precluded in relation to this project.
Locatable Minerals	
1. Consistent with the Mining and Mineral Policy Act of 1970, continue to encourage the responsible development of mineral resources on National Forest lands. Concurrently, require mitigation measures to protect surface resources.	Standard being met because development of minerals is not being precluded in relation to this project.
2. Provide guidance to miners and prospectors for planning reclamation and to minimize environmental damage.	NA as project is not related to giving guidance to miners.
3. Increase I&I efforts through publicizing the appropriate laws, regulations, and policies, to reduce cases of non-compliance from lack of knowledge of mining rules.	NA as project is not related to giving guidance to miners.
4. Increase compliance inspections commensurate with mineral activities.	NA as project is not related to giving guidance to miners.
5. When every reasonable attempt has failed to correct mining operations that are unnecessarily or unreasonably causing or threatening to cause irreparable injury, loss, or damage to surface resources, the Forest Service will seek judicial relief.	NA as project would not interfere with regulation of mining operators.

Standard	If Standard applies, how is standard being met
6. Maintain a liaison with local mining industry and mining associations. Cooperate with Federal and State agencies which administer mineral laws.	NA as project would not interfere with regulation of mining operators.
7. Following mineral development the Forest Service will require reclamation of surface disturbance to prevent or control on- and off-site damage. Reclamation includes, but is not limited to: a. Control of erosion and landslides. b. Control of water runoff. c. Isolation, removal, or control of toxic materials. d. Reshaping and revegetation of disturbed areas. e. Rehabilitation of fisheries and wildlife habitat.	NA as project would not interfere with regulation of mining operators.
Saleable Minerals	
1. Common variety mineral permits will be considered on a case-by-case basis and will be issued only if consistent with the management area goals.	NA as project would not interfere with regulation of mining operators.
Leasable Minerals	
See ROD for Helena National Forest and Elkhorn Mountains Portion of the Deerlodge National Forest Oil and Gas Leasing EIS.	NA as project would not interfere with regulation of Oil and Gas leasing.

Standard	If Standard applies, how is standard being met
Seismic Exploration	
1. An environmental analysis will be completed for each application. A prospecting permit will be issued on a case-by-case basis and will contain stipulations designed to coordinate surface resource values. The following apply where appropriate: a. Water quality and quantity: Stipulations may be issued to limit activities within 100 feet of all streams, lakes, springs, and ponds. b. Threatened and endangered species habitat: Stipulations will be issued to protect threatened and endangered species by limiting activities during critical periods, and protecting important habitat elements. c. Nongame habitat: Stipulations may be used to limit surface use as a coordination and/or mitigation measure for species listed in State of Montana, Species of Special Interest and Concern. (The State species list is part of the Wildlife Planning Records.) d. Big game habitat: To protect key areas for big game (i.e., winter range, summer concentration habitats, calving areas, lambing areas, big game travel routes, etc.), stipulations may be used during critical periods. e. Archeological and Historic Resources: Proposed seismic survey work which may impact identified cultural and paleontological resources will be required to skip portions of the work or to relocate survey lines around known resource areas. Other resource threatening work will be required to fully comply with the Antiquities Act of 1906 and other related Acts pertaining to cultural resources. f. Special Uses, Leases, and Permits: To protect authorized special uses, leases, and permits, include stipulations to restrict occupancy by timing and location on a case-by-case basis. g. Fire: Seismic work during periods of high fire danger may not be allowed. To prevent wildfire, stipulations may be included to restrict timing and location of seismic operations. Stipulations may also be used to specify procedures and fire fighting equipment required by seismic crews. h. Land Stability and Erosion: Surface occupancy stipulations may be used to prohibit occupancy on lands subject to mass wasting and on slopes 60 percent and greater. i. Recreation: To accommodate concentrated recreational areas (i.e., picnic grounds and campgrounds), stipulations may be used to restrict seismic activities by location and timing.	NA as project would not interfere with regulation of seismic exploration operations.

Standard	If Standard applies, how is standard being met
Land Uses	
1. Approve special use permits only when they comply with the goals of the management area affected. Appendix O provides guidelines for special uses and subdivisions.	N/A–Project does not include the approval of special use permits
2. Enhance resource management by working with other agencies and landowners to develop and achieve common resource objectives.	Standard met through scoping and public comment period
3. The Forest will encourage governing entities to proceed with land use planning and zoning prior to subdivision development on lands adjacent to or within the Forest boundary.	N/A-Project does not include planning and zoning decisions
4. Developers should provide for all necessary services within the limits of the subdivision without infringing on adjacent National Forest lands. But National Forest lands adjacent to subdivisions can be used for services associated with primary access and/or primary utility corridors if these services cannot reasonably be incorporated within the subdivision, or on other adjacent or nearby properties not administered by the Forest Service.	N/A-Project does not involve subdivisions
5. The Forest Service will attempt to inform non-Federal landowners and land developers adjacent to the Forest of the management direction on the Forest land.	Standard met through open houses, scoping, public comment period and Forest website.
6. Adjacent private lands will not preclude multiple use management of lands administered by the Forest Service. But management of Forest Service land will be modified where appropriate and necessary to complement land uses on adjacent non-Federal property.	Standard met through the enhancement of the project area through treatment designed to restore the environment to historic conditions. Alternatives are responsive to public comments received on the DEIS.
7. When an environmental analysis for a proposed Forest project indicates that activities on adjacent land will require Forest Service management activities to be restricted to protect soil, water, and wildlife resources, the necessary restrictions will be determined. If no activity on Forest land is possible, the desired management will be scheduled for later decades when sufficient recovery has occurred on adjacent lands to permit the proposed activities on Forest Service land to continue. Exceptions to this policy will be considered on a case-by-case basis, when deferring management would result in adverse impacts to other Forest resources.	Standard met through design features and BMP implementation

Standard	If Standard applies, how is standard being met
Landownership Adjustment	
1. A landownership adjustment schedule for the Helena Forest will be developed using the following criteria: a. The priority for acquisition will be for lands with assessed high wildlife, recreation, and watershed values. Acquisition may entail purchase or donation of fee simple or partial interests, such as conservation and scenic easements, or exchange procedures. b. Emphasize acquisition of land and interests in land to allow access to all Helena National Forest lands. c. Emphasize acquisition of trailhead facilities and trail rights-of-ways, especially to wilderness and dispersed recreation areas. d. Consider disposal of tracts where past patenting has resulted in isolated, intermingled National Forest ownerships, such as at York, Rimini, and Unionville.	N/A-Project would not include acquisition or disposal of land.
Administration Facilities	
1. Provide a cost effective program of maintenance to necessary administrative facilities. This will protect the investment, provide for public and employee's health and safety in accordance with current building codes and standards, and present a neat, well-kept appearance in harmony with its surroundings.	Not applicable to the Telegraph Vegetation Project because no administrative facilities are in the area, or impacted by any alternative.
2. Construct new administrative facilities to replace existing structures that are no longer cost effective to maintain or expand or are inadequate to serve the needs of resource management.	Not applicable because the Forest Service would not construct new facilities to replace existing structures as part of this project.
Roads	
1. Road construction and reconstruction will be the minimum density, cost, and standard necessary for the intended need, user safety, and resource protection.	The minimum road work is proposed to provide for safe access and product removal from the proposed timber units in the action alternatives. Alternative 3 was also developed to reduce the amount of road construction associated with temporary roads. Finally, stream crossing improvements are included in each action alternative, to varying degrees, which are designed to provide for improved resource protection and watershed conditions associated with reduction in sedimentation, aquatic organism passage, and accommodation of high stream flows.
2. Forest development roads will not be constructed without an approved Area Transportation Analysis. Other road construction will be evaluated on a case-by-case basis.	This standard is met. No new construction of permanent National Forest System roads is proposed with alternative 2. Analysis was completed for the 0.7 miles of specified road construction for Alternative 3 and 4.

Standard	If Standard applies, how is standard being met
3. Forest Specialists representing soils, watershed, and fisheries shall identify potential soil erosion, water quality and fisheries problems and provide input to the development of road design standards. Mitigating measures which will be considered in developing these standards include but not limited to: a. Reestablishing vegetation on exposed soils. b. Protecting the road surface through surface stabilization techniques such as dust oil or gravel, especially on decomposed granitic soils. c. Preventing downslope movement of sediment with the use of slash windrows below the fill slopes near stream crossings, baled straw in ditches and catch basins at culvert inlets. d. Reducing soil disturbance in or near streams by diverting clear water around culvert installation sites, especially in important fisheries streams. e. Controlling the concentration of water flow by in-sloping, out-sloping and using minimum grades at stream crossings.	Specific items included in this standard are addressed through referencing the soils, hydrology, fish and transportation reports for road construction, reconstruction and maintenance recommendations, this includes the decommissioning of temporary roads upon project completion.
4. Short-term local roads will be used for one time road access needs.	Temporary roads used for the Project action alternatives will meet this standard for short term local roads.
5. Coordinate transportation planning and road management with State and local agencies and owners of intermingled land.	There are several county and private roads identified as necessary for haul in the action alternatives. Coordination with these agencies and individuals is needed prior to use and haul, in accordance with the Forest Plan.
Road Management	
1. The Helena National Forest will generally be open to vehicles except for roads, trails, or areas which may be restricted. (See Forest Visitor Map for specific information.) The Forest Road Management Program will be used to review, evaluate, and implement the goals and standards of the management areas in the Forest Plan with regard to road, trail, and area wide motorized vehicle use.	No changes in existing travel management direction are proposed under the alternatives with respect to allowed uses and roads available for public use.

Standard	If Standard applies, how is standard being met
2. Road management decisions will be based on user needs, public safety, resource protection, and economics. Most existing roads will be left open. But most new roads will be closed, at least during critical periods for big game. The criteria to be used for road, trail, or area restrictions are as follows: a. Safety - Restrictions may be necessary to provide for safety of Forest users. b. Resource Protection - Unacceptable damage to soils, watershed, fish, wildlife, or historical/archaeological sites will be mitigated by road restrictions or other road management actions as necessary. Restrictions for wildlife reasons will be coordinated with the MDFWP. c. Economics - Restrictions will be considered if maintenance costs exceed benefits. d. Conflicting Use - Conflicts between user groups (especially motorized vs. non-motorized) may require restrictions. e. Facility Protection - Restrictions may be necessary to prevent damage to administrative sites, special use facilities, or other improvements. f. Public Support - Public concern may necessitate restricting or opening some roads, trails, or areas. g. Management Objectives - Road management will be used to achieve land management objectives.	No changes in existing travel management direction are proposed under the alternatives with respect to allowed uses and roads available for public use. All temporary roads constructed for this project would be closed to the public, only being used for administrative use only.
3. The travel restrictions will be reviewed annually and revised as necessary to meet the goals and objectives of the Forest Plan.	No changes in travel management direction are proposed under the alternatives with respect to allowed uses and roads available for public use, as the scope of the project is associated with implementing proposed vegetation treatments.
4. Enforcement of the Road Management Program will be a high priority. Weekend patrolling, signing, gating, obliterating unnecessary roads, and public education will be used to improve enforcement. Enforcement will be coordinated with the MDFWP and other State and local agencies.	No changes in travel management direction are proposed under the alternatives with respect to allowed uses and roads available for public use. Short-term delays and closures are planned in order to provide for public safety during implementation of the vegetation treatments and product haul associated with the action alternatives.
Road Maintenance	
1. Roads will be maintained in accordance with direction provided in FSH 7709.15 (Transportation System Maintenance Handbook) and will be at a level commensurate with the need for the following operational objectives: resource protection, road investment protection, user safety, user comfort, and travel efficiency.	Road maintenance and reconstruction in the action alternatives would be performed in accordance with the Forest Plan and the Montana and Region 1 BMPs.
2. Assigned maintenance levels will be reviewed annually and revised if management objectives change.	No changes in assigned maintenance levels are proposed in the alternatives.
3. A Forest Road Maintenance Schedule will be prepared annually and be responsive to the long term needs of the Forest Transportation System.	Not applicable to this project, though there are several roads proposed in the action alternatives for maintenance and reconstruction to accommodate safe product haul while providing for minimal negative resource impacts.

Standard	If Standard applies, how is standard being met
4. Forest specialists representing soils and watershed shall provide input to the road maintenance planning process to verify maintenance standards, identify rehabilitation needs, and designate roads which should be permanently closed for resource protection. Specialists will annually submit capital investment project proposals for major road reconstruction needs.	Forest Fisheries and Hydrology Specialists have identified potential soil erosion, water quality and fisheries problems and provided input to the development of road design standards. The Fish and Hydrology reports identify potential erosion, water quality and fisheries concerns and provide input to the development of road design standards. A summary of features are included in the Assumptions section of the Fish, Hydrology, and Soils reports. This report includes an analysis of existing roads that have been identified as sediment sources. Most of these sediment sources are being addressed through project-related road improvements. Fisheries and watershed specialists worked with the ID Team and transportation specialist to develop stream crossing improvements for inclusion in each action alternative. Once a decision is made, these sites could qualify for a number of supplemental funding opportunities. No improvements would occur under the no-action alternative.
Trails	
1. Trail management, such as trail standards, maintenance schedules, funding, trail use, construction, and reconstruction, will follow the guidance in Trails Management Handbook, FSH 2309.18.	Not applicable to the Telegraph Vegetation Project because no activities are proposed to existing trails under any Alternative.
2. Generally, trail maintenance work priorities will be established as follows: a. Priority 1. Activities to correct unsafe conditions relative to management objectives. b. Priority 2. Activities to minimize unacceptable resource and trail damage. c. Priority 3. Activities that restore the trail to planned design standards.	Not applicable to the Telegraph Vegetation Project because no activities are proposed to existing trails under any Alternative.
3. Trail construction/reconstruction will be designed and accomplished to be compatible with the recreation settings and management area goals.	Not applicable to the Telegraph Vegetation Project because no activities are proposed for new trail construction or to existing trails under any Alternative.
4. Trails may be abandoned or rerouted when a road changes the character of the trail or when the maintenance cost exceeds the benefit.	Not applicable to the Telegraph Vegetation Project because no existing trails are proposed to be abandoned or re-routed.
Protection - Insect and Disease	
1. Silvicultural systems will be the primary tool for preventative pest management. Use silvicultural systems to: (1) improve species diversity, growth, and vigor for stands and (2) increase the size diversity and class diversity between stands.	This standard does not apply to the No Action Alternative because no treatments would occur. The standard applies and is met for the Action Alternatives because treatments would occur that remove trees impacted by the beetle outbreak, and promote growth and vigor of future forests. See Forested Vegetation specialist report.
2. During ongoing infestations, control insects and disease through silvicultural and biological practices. Chemical controls will be limited to high value areas or used on a broader scale only when all other measures have failed and other resource values can be protected. Emphasize cooperative control measures between Federal, State, and private landowners.	The standard applies and is met for the Action Alternatives because the proposed silvicultural treatments address the mountain pine beetle infestation. No chemical treatments are proposed. The No Action alternative does not employ any of these techniques. Refer to the Forested Vegetation specialist report.

Standard	If Standard applies, how is standard being met
3. Biological practices will be considered in controlling insect and disease infestations.	The standard does not apply. There are no feasible biological practices for the control of mountain pine beetle.
4. If possible, harvest stands which are a high risk for mountain pine beetle attack before harvesting moderate or low risk stands.	This standard does not apply because no high-risk stands remain unaffected by mountain pine beetle. See Forested Vegetation Specialist Report.
Protection - Wildfire	
1. The appropriate suppression response(s) is discussed by management area. See Table I in Appendix R, Fire Management, for suppression summaries.	Fire suppression strategies and tactics for all fire starts (appropriate management response) are based on firefighter and public safety, fire location, access, barriers to fire spread, threatened infrastructure, current and forecasted weather, available resources, vegetation conditions, and management area direction. This area is currently listed as a Fire Management Unit (FMU) 2 within the Helena National Forest Fire Management Plan. For the majority of fires in FMU2, routinely consider managing unplanned ignitions to meet resource and human value protection objectives. In all cases, provide for firefighter and public safety at all times. Where FMU2 overlaps with Wildland Urban Interface (WUI) consider control and contain strategies to minimize risk to life and property. (Helena National Forest Fire Management Plan 2013 - 3.2.2B FMU2 Guidance) However, with the close proximity to the upper Tenmile watershed and current fuel conditions in the project area, expected suppression method call for rapid response and aggressive suppression strategies. The suppression methods and management of this area will not change with either alternative.
2. Locate timber sales, or cutting units within a sale, to break-up contiguous natural fuel.	The proposed mechanical and prescribed burn treatments would reduce existing surface fuel loading levels and break up contiguous vegetation to create landscape patterns that alter fire spread. Treated areas, in general, would provide places where firefighters can more safely and effectively perform suppression actions thereby limiting the potential for high-intensity fire to spread within and towards the WUI or the Tenmile watershed.
Protection - Law Enforcement	
1. Law enforcement agreements will be maintained with cooperating counties.	Not applicable to the Telegraph Vegetation Project because this standard is outside the scope of activities being proposed.
2. Each Ranger District should maintain at least one employee qualified in advanced law enforcement (Level III).	Not applicable to the Telegraph Vegetation Project because this standard is outside the scope of activities being proposed.
3. Across the Forest, two full-range law enforcement positions (Level IV) should be maintained.	Not applicable to the Telegraph Vegetation Project because this standard is outside the scope of activities being proposed.
Prescribed Fire – General	
1. A burning schedule and specific objectives should be completed for each project.	A detailed silvicultural prescription will be completed for each treatment unit prior to implementation which will be carried through into the prescribed fire burn plan and prescribed fire parameters.

Standard	If Standard applies, how is standard being met
2. The burning prescription should be plant specific (i.e., burning may set back such species as bitterbrush and Idaho or rough fescue, if done with insufficient soil moisture or when "greening up").	A detailed silvicultural prescription will be completed for each treatment unit prior to implementation which will be carried through into the prescribed fire burn plan and prescribed fire parameters.
3. Prescribed burning should not exceed the natural fire frequency of the Fire Group.	Currently 69% of the project is within a moderate departure rating, with current proposed treatments prescribed burning would not exceed the natural fire frequency.
4. Use prescribed fire only during periods of adequate smoke dispersal and in areas where water quality can be adequately maintained.	Approval for implementation of the prescribed fire burn plan will be obtained through Montana/Idaho Airshed Management System, as well as having State and County permits in place prior to ignition.
5. The Helena National Forest Soil Survey will be used to assist with individual site selection, to avoid potential soil and/or watershed degradation.	For all planned broadcast burn units, field evaluations will be completed to determine DSD from harvest activities. These site visits will determine the burn prescription specific to burn severity to soil. All prescriptions will be design to minimize DSD and meet Regional Standards.
6. Smoke sensitive areas will be identified and burning prescriptions developed accordingly.	All Class I Airsheds and sensitive receptors have been identified within 60 kilometer radius around the project area and will be carried forward into the prescribed fire burn plans. Prior to ignition County Health Services for both Lewis & Clark and Powell Counties will be notified of predicted impact areas so they can notify sensitive receptors within the area.
7. The MDFWP should be invited to participate in selecting treatment sites, executing burning plans, and monitoring and evaluating the overall program.	MDFWP will be on the burn plan contact list.
Prescribed Fire - Timber	
1. Where timber production is a primary land use, prescribed burning will only be applied where timber production can be maintained or enhanced by burning.	No burning is proposed with No Action, but the standard applies to the Action Alternatives and is met. Burning would primarily occur after harvest, in part to promote desirable regeneration. Burning without harvest would occur in T-1. This burning would be designed to not preclude natural regeneration and future timber production. See Forested Vegetation Specialist Report.
2. Prescribed fire, when used as a fuels management or site preparation technique after harvest, should be coordinated with the timber stand's silvicultural prescription.	Standard does not apply to No Action, but does apply to the Action Alternatives and is met. Burning would be incorporated into silvicultural prescriptions. Refer to Forested Vegetation Specialist Report.
Prescribed Fire - Range and Wildlife	
1. Areas that have a demonstrated need to maintain or increase forage because of conifer encroachment, shrub invasion, and imbalance in forb/grass ratios, and/or where grass and shrubs are deteriorating should be recommended for prescribed burning.	A rangeland management specialist was part of the planning team for this project. The needs for the range resource were brought forward in the range report and incorporated into this FEIS.
2. Where livestock and wildlife share sagebrush areas, prescribed fire will be designed to produce a mosaic of burned and unburned islands.	Prescribed fire is primarily focused in timber stands. The prescription for any sagebrush stands with the RX units will have a low severity prescription.
3. Just prior to and following a prescribed burn on grassland, livestock use should be withheld to ensure that adequate fine fuels are available for burning and to prevent overuse of new growth.	The design features addresses this. Fuels and range will work together during the planning process of the prescribed fire to plan management in pre and post fire.

Standard	If Standard applies, how is standard being met
Riparian	
1. Riparian areas will be delineated prior to implementing any management activities. Riparian areas include: a. Aquatic ecosystems (water, streambed, banks) b. Floodplains c. Riparian ecosystems (area dominated by riparian vegetation) d. One hundred feet from edges of all perennial streams, lakes, and other water bodies, including a, b, and c above.	Standard would be met. Field crews have conducted surveys throughout the project area and mapped aquatic ecosystems where they existed. Ignition buffers would be implemented and SMZ and RHCA regulations would be followed. A summary of design features are included in the Assumptions section of the Fish and Hydrology reports.
2. Discourage concentrated use, such as campsites and roads, in riparian areas. Close wet meadows and wet areas to nonsnow ORVs.	This standard would be met because the Telegraph Vegetation Project does not propose any concentrated use or further development of campsites and roads in riparian areas. Furthermore, various watershed improvements are proposed under each action alternative including decommissioning of roads with 150 feet of streams.
3. Identify, prioritize, and develop riparian area rehabilitation projects by watershed.	Not applicable to the Telegraph Vegetation project because this is not a riparian area rehabilitation project.
4. Roads should not be constructed in the riparian area except to cross them. Use the appropriate soil and water conservation practices to minimize sedimentation during instream construction activities and include them in road construction contracts.	Standard would be met. Proposed temporary roads are generally in upland locations that would likely not pose a risk of sediment delivery to streams. There are no proposed road/stream crossings associated with temporary roads. BMPs would be in place to minimize impacts to riparian and fish bearing habitat. A summary of design features, BMPs and mitigation measures are included in the Assumptions section of the Fish, Hydrology, and Roads reports.
5. Assure that road construction in riparian areas is substantially completed or winterized during winter shut down to minimize peak flow sediment yield during spring thaw.	Standard would be met. No road construction would occur in riparian areas.
6. Generally, avoid lateral fills within normal high water marks.	This standard would be met. Lateral fills within normal high water marks are not expected as a result of the Telegraph Vegetation project.
7. Generally, avoid stream course encroachment and channelization.	This standard would be met. Stream course encroachment and channelization are not expected as a result of the Telegraph Vegetation project.
8. Use of chemicals within the riparian area will be minimized to the extent feasible, will be coordinated with wildlife, watershed, and fisheries personnel and a certified pesticide applicator.	This standard would be met. Each resource specialist provides guidance on the use of chemicals which includes the coordination with other resource staffs.

Standard	If Standard applies, how is standard being met
9. Riparian areas will be managed to be compatible with dependent wildlife species.	This standard would be met. The Fish and Wildlife reports for the Telegraph Vegetation Project provide analysis information on riparian dependent species. Additionally, the design features for the project is specific to tree removal within the RHCA's. The action alternatives are consistent with this standards. Design features are in place to ensure that wetland habitats and riparian zones would be managed to be compatible with associated wildlife species. These elements extend protection to moist summer range sites for elk and to forage habitat for moose in wetlands and riparian zones. All treatments would promote browse for moose.
10. The timing and type of machinery used in riparian areas should be planned to minimize site damage.	The Hydrology specialist report includes a discussion of restrictions on equipment and activities in riparian areas developed in consultation with the silviculturalist specialist. Design features – Chapter 2 FEIS.
11. Provide vegetative cover adjacent to streams to serve as a filter strip for sediment and maintain optimum water temperatures, as well as provide large debris for long-term instream fish cover and pooling. Where vegetative manipulation is possible, the activities will strive to achieve a balance of age classes and desired species composition.	This standard would be met. Additionally, the design features for the project is specific to tree removal within the riparian areas.
12. Provide for stream crossing structure design that allows free water flow and fish passage.	Standard would be met. Culverts in the project area and a long haul routes have been analyzed with culvert monographs to identify which culverts may be under capacity. The project would upgrade several culverts in the project area. Replacement culverts will be designed in accordance with forest-wide standards.
13. Emphasize off-stream watering in range allotments to prevent damage to the riparian area.	Not applicable to the Telegraph Vegetation project because the project does not propose any changes to livestock watering methods.

Standard	If Standard applies, how is standard being met
14. Livestock grazing in riparian areas will be controlled at the following levels of utilization:	Not applicable to the Telegraph Vegetation project because project proposals do not affect the levels at which livestock graze in riparian areas.

Vegetative Type	Grazing Systems	Vegetative Condition Class	Forage Utilization by Weight	Browse Utilization by % of Leader Use
Grasslands/	Continuous	Good	5%	N.A.
Grass-like/Forb		Fair	5%	N.A.
		Poor	20%	N.A.
	Rest-	Heavy Use		
	Rotation	Pasture 1/	60%	N.A.
		Light Use		
		Pasture	5%	N.A.
	Defer-	Heavy Use		
	Rotation	Pasture	50%	N.A.
		Light Use		
		Pasture	40%	N.A.
Willow/	Continuous	Good	55%	50%
Grass/		Fair	5%	50%
Grass-like		Poor	5%	50%
and Willow/	Rest-	Heavy Use		
Forest	Rotation	Pasture 2/	70%	50%
		Light Use		
		Pasture	50%	50%
	Defer-Rotation	Heavy Use		
		Pasture	60%	50%
		Light Use		
		Pasture	5	50%

1/ Trampled areas and streambank damage caused during heavy use year should be healed or stabilized with the following year.
2/ Disturbance on heavy use pasture should be stabilized or healed prior to use the following year.

Table B-2. Management Area Direction and Acres

Management Standards	If Standard applies, how is standard being met
Management Area M-1	
Description: These areas are non-forest and forested land where timber management and range or wildlife habitat improvements are currently uneconomical or environmentally infeasible. The area is scattered throughout the Forest and is found at all elevations and slopes ranging from 10 percent to over 60 percent. The parcels range in size from 20 to 500 acres.	**Management Goal** - Maintain the present condition with minimal investment for resource activities, while protecting the basic soil, water, and wildlife resources.
Recreation - Dispersed recreation can be supported by constructing trails, trailhead facilities, and sanitation facilities.	Not applicable because the Telegraph Vegetation Project does not propose the construction of trails, trailhead facilities, and sanitation facilities.
Visual - Because of the lack of activity, the general visual quality objective (VQO) is retention. Less restrictive VQOs may be considered on a case-by-case basis, if project level planning on an adjacent management area affects a M-1 management area. [See Forest Landscape Management Book, Vol. 2 (Ag. Hdbk. No. 462) for definitions of VQOs and how they are applied.]	The potential direct, indirect, and cumulative effects of the proposed activities to visual resources would be consistent with forest plan direction for visual resources because the application of the landscape rehabilitation management alternative as outlined in the VMS would allow a longer period of time for the retention VQO to be achieved.
Wildlife and Fisheries - Management practices to maintain or improve wildlife habitat will be permitted where necessary to meet the objectives of adjacent management areas.	Management activities designed to benefit wildlife habitat and fisheries habitat meet the objectives of adjacent management areas. This standard is met.
Range - Livestock use may remain at the 1983 level if the area is within existing allotments. Maintain range improvements and build new improvements, if they are needed to facilitate management of adjacent areas.	Not applicable because the Telegraph Vegetation Project does not propose any changes to livestock use within the project area.
Timber - Timber harvest, such as salvage and firewood removal, may occur where access exists. Slash created by any management practice will be disposed of in a manner consistent with the management area goals. Forested lands are classified as unsuitable for timber management.	This standard applies and is met. In the Action Alternatives, the units to be treated are proposed for pre-commercial thinning or harvest where access exists and slash disposed of through whole tree yarding, burning, and/or scattering. Prescribed fire alone would also occur in this management area.
Facilities - Roads will be allowed for special uses, mineral development, or to provide access to other management areas, consistent with protection of soil and water values. Roads may be opened or closed, depending on the objectives of the adjacent management areas. - Existing roads and trails will be maintained as needed.	Existing roads would be maintained or reconstructed for implementation under the action alternatives.
Minerals – See Forest Plan Amendment #13 for lease standards.	Not applicable to the Telegraph Vegetation Project as no current oil and gas leases exist within the project vicinity.

Management Standards	If Standard applies, how is standard being met
Protection - Salvage of dead, dying, or high-hazard trees is permitted to prevent disease and insect population build-up. - The appropriate fire suppression response ranges from control to confinement depending upon location, expected fire behavior, and other decision criteria related to values at risk. These criteria are stated in the Fire Management Direction in Appendix R. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are stated in the Fire Management Direction in Appendix R. -Evaluate areas periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on watershed and other resource values.	This standard applies and is met. Part of the purpose and need for this project includes salvage of insect-killed trees, establishing desirable regeneration, and improving forest health to be more resistant and resilient to bark beetle activity in the future. Insect-killed and currently infested trees are proposed for removal in harvest units with all Action Alternatives.
Management Area L-1	
Description: These lands are within grazing allotments and are generally non-forested consisting of bunchgrasses, sage and other shrubs or sparsely forested areas with Douglas fir or ponderosa pine as the dominant species. Slopes vary from 10 percent to greater than 60. This management area contains inclusions of elk calving areas, hiding cover, and summer range, but excludes identified elk winter range.	**Management Goals -** Maintain or improve vegetative conditions and livestock forage productivity. Optimize livestock production through intensive grazing systems, while maintaining other resource uses.
Recreation - Motorized and non-motorized dispersed recreation activities are permitted and may be encouraged by constructing or maintaining trails and trailhead facilities. Existing trails and facilities will be maintained, unless they are no longer needed. - Controls on motorized recreation will be implemented where necessary to protect the vegetation, soil, water, and wildlife resources and to prevent road damage.	Not applicable to the Telegraph Vegetation Project because there are no proposals that change the travel management status, constructs, or maintains trails.
Visual - Management practices will generally follow guidelines for the maximum modification VQO. The portions of this area (if any) that are within the sensitive viewing areas of the roads, trails, and areas listed in Appendix B will be managed to meet the more restrictive VQOs noted in the appendix. [See Forest Landscape Management Book, Vol. 2 (Ag. Hdbk. No. 462) for definitions of VQOs and how they are applied.]	The potential direct, indirect, and cumulative effects of the proposed activities to visual resources would be consistent with forest plan direction for visual resources because the application of the landscape rehabilitation management alternative as outlined in the VMS would allow a longer period of time for the retention VQO to be achieved.
Wildlife and Fisheries - Specific wildlife and fisheries needs will be identified and considered when developing allotment management plans, provided the needs are compatible with area goals. - Habitat improvement projects will be scheduled when they would help achieve the area goals.	This standard does not apply to the Telegraph Vegetation Project because there are no treatments proposed in MA L-1.

Management Standards	If Standard applies, how is standard being met
Range - Livestock grazing will generally be maintained at or above 1983 levels, unless a range analysis or monitoring indicates there is a need to change. - Vacant allotments will be restocked if a range analysis shows it to be feasible and a demand exists for additional AUMs. - Intensive management systems will be implemented, where cost-effective, to sustain forage production. Management systems will be designed to minimize conflicts with wildlife. - Forage improvement projects such as sagebrush burning, tree encroachment burning, and noxious plant control will be carried out on a scheduled basis. The schedule will be developed as part of the allotment management plans. - Improvements, such as cattleguards, fences, and watering facilities, will be maintained and reconstructed as needed to continue present levels of grazing. New improvements may be constructed if the need is identified in an approved allotment management plan.	Not applicable because the Telegraph Vegetation Project does not propose any changes to livestock use within the project area.
Timber - Timber harvest may be used as a tool to improve forage production. However, forested land is classified as unsuitable for timber management.	No harvest treatments are proposed in L-1 under any Alternative.
Water and Soils – See Forest-Wide Standards.	See Forest-Wide Standards.
Minerals -See Forest Plan Amendment #13 for lease standards.	Not applicable to the Telegraph Vegetation Project as no current oil and gas leases exist within the project vicinity.
Lands – See Forest-Wide Standards.	See Forest-Wide Standards.
Facilities - Roads normally will not be constructed for range management activities, but may be constructed for other activities, such as mining, or to provide access to adjacent management areas. When an existing barrier is intersected, the necessary structures to prevent cattle drift (fences, gates, cattleguards, etc.) will be installed during road construction. - Where existing trails are intersected by new road construction, the trail will be evaluated to determine if it should be retained on the system or abandoned.	No road construction is proposed under the project alternatives within MA L-1.

Management Standards	If Standard applies, how is standard being met
Protection - Use prescribed fire as a tool to increase the quality and quantity of forage. - The appropriate fire suppression response ranges from control to confinement depending upon location, expected fire behavior, and other decision logic criteria related to values at risk. These decision criteria are stated in the Fire Management Direction in Appendix R. - Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are detailed in the Fire Management Direction in Appendix R.	No treatments are proposed in L-1 under any Alternative.
Riparian - See Forest-wide Standards.	Included in Forest-wide Standards
Management Area T1	
Description - This management area consists of lands available and suitable for timber management with varying physical and biological environments as determined by soil, slope, aspect, elevation, and climatic factors. Vegetation varies from ponderosa pine on the drier sites to spruce in the more mesic sites with nearly all slopes and aspects represented. Although this area consists primarily of suitable forest land, there are inclusions of non-forest and nonproductive forest lands. This area includes some small ponds and marshes which are considered unique to this part of Montana.	**Management Goals -** Provide healthy timber stands and optimize timber growing potential over the planning horizon. Emphasize cost-effective timber production, while protecting the soil productivity. Maintain water quality and stream bank stability. Provide for dispersed recreation opportunities, wildlife habitat, and livestock use, when consistent with the timber management goals.
Recreation - Motorized and non-motorized dispersed recreation activities are permitted and may be supported by constructing or maintaining trails and trailhead facilities. Existing trails and facilities will be maintained unless they are no longer needed. - Controls on motorized recreation will be implemented where necessary, to protect the vegetation, soil, and water resources and to prevent road damage.	Motorized and non-motorized dispersed recreation activities would still be permitted with this project. However, short term traffic delays and limited access to parts of the project are maybe needed for safety during project implementation.
Visual - Management practices will generally follow guidelines for the maximum modification VQO. The portions of this area (if any) that are within the sensitive viewing areas of the roads, trails, and areas listed in Appendix B will be managed to meet more restrictive VQOs noted in the appendix. [See Forest Management Book, Vol. 2 (Ag. Handbook, No. 462) for definitions of VQOs and how they are applied.]	The potential direct, indirect, and cumulative effects of the proposed activities to visual resources would be consistent with forest plan direction for visual resources because the application of the landscape rehabilitation management alternative as outlined in the VMS would allow a longer period of time for the retention VQO to be achieved.
Wildlife and Fisheries - Wildlife and fisheries habitat improvement projects may be implemented, provided they are compatible with the management area goals. - Forest-Wide Standards and Appendix D contain guidance for T&E species habitat.	Wildlife and fisheries habitat improvements as a result of proposed treatments in this MA have been identified. Refer to the Wildlife and Fish Specialist Reports. Refer to the T&E section under Forest-Wide Standards for more information. This standard is met.

Management Standards	If Standard applies, how is standard being met
Range - Livestock grazing is compatible, except where it conflicts with stand establishment. Fencing, temporary herding, or other techniques may be used to protect regeneration where needed. - Pasture and allotment boundaries should be maintained during and following timber harvest. This may require additional fencing, where natural barriers are breached by timber sale activities. - Livestock grazing will be maintained at the 1983 levels within existing allotments, however, the level may be increased or decreased if monitoring or range analysis shows a need or opportunity to change.	This standard applies and is met. The design features for the project incorporates this standard.
Timber - This management area is suitable for timber management activities. - Timber harvest practices include clearcut, group selection, and shelterwood harvest, depending on habitat group, physical site conditions, and silvicultural objectives. Precommercial thinning and intermediate harvest may occur where needed as determined by silvicultural objectives and project planning. (Appendises H and M provide broad guidelines for various habitat groups.) - As a minimum, a cutover area will not be considered an opening when: (1) a new forest stand is established and certified as stocked, and (2) vegetative conditions reach the point where harvest of additional timber can occur and the combined area can still meet watershed management objectives. - Prescribed burning or other techniques may be used for slash disposal, site preparation, silvicultural, and livestock objectives. In habitat groups where fire is not a useful treatment tool, lopping and scattering, yarding unmerchantable material (YUM), or other methods will be used to reduce fuel accumulations and prepare sites for regeneration. - Project level planning will provide for stand regeneration within five years of final harvest. - Even-aged stands will be scheduled for final regeneration harvest when they generally have reached the culmination of mean annual increment (CMAI) of growth. Exceptions include thinning or other stand improvement measures, salvage or sanitation harvest, management for experimental or research purposes and to meet other resource objectives. CMAI for primary species on the Helena National Forest is shown in Appendix H.	Standard does not apply to No Action, which would not actively manage T-1. The standard applies to Action Alternatives and is met. Timber management activities would occur on approximately 3,662 acres within this MA for the proposed action and 2,216 acres for alternative 3, along with prescribed burning for slash disposal and natural regeneration which would be assured within 5 years of final harvest. The stands where final regeneration harvest were likely at or very near CMAI; and regardless have now been killed by the mountain pine beetle and therefore can be considered in a salvage condition. Refer to the Forested Vegetation Specialist Report.
Water and Soils - Timber harvest will not create runoff increases which are likely to result in long term stream channel degradation. All timber sale proposals will include an analysis of the current and projected status of sediment produced. The project proposal will analyze and evaluate the potential water quantity and quality, and soil productivity impacts; mitigation measures should be developed to minimize adverse effects. If a proposal shows the water quality cannot be maintained, the project will be reevaluated or terminated.	This standard is met. An analysis has been completed and is documented in the Hydrology Specialist Report and associated project record. In addition, design features have been included for project implementation and would be applied when necessary.

Management Standards	If Standard applies, how is standard being met
Minerals – Locatable – See Forest-Wide Standards. -Leasable See Forest Plan Amendment #13 for lease standards	Locatable - See Forest-wide Standards and Forest Plan Consistency, Minerals General and Locatable Minerals sections. Leasable - Not applicable to the Telegraph Project as no current oil and gas leases exist within the project vicinity.
Lands – See Forest-Wide Standards	See Forest-Wide Standards.
Facilities - Roads will be constructed as needed to meet the management objectives of the area. - Where existing trails are intersected by new road construction, the trail will be evaluated to determine if it should be retained on the system or abandoned.	New temporary road construction is proposed under the action alternatives, to access vegetation treatment units. New temporary roads would be closed and rehabilitated after use.
Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - The appropriate fire suppression response ranges from control to containment depending upon location, expected fire behavior, and other decision logic criteria related to values at risk. These decision criteria are stated in the Fire Management Direction in Appendix R. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling.	Standard does not apply to No Action, but does apply to the Action Alternatives and is met. Proposed harvest would respond to insect-caused mortality and lower the hazard of future insect problems within treatment units. Prescribed fire would be used to reduce natural fuels. Refer to Forested Vegetation Specialist Report.
Riparian - Generally, harvesting will only occur in riparian areas in conjunction with sale activity on adjacent lands. - In riparian areas, any timber harvest should be on a 240 year rotation, and harvest types should be selection or group selection. -See Forest Wide Standards for grazing in riparian. - The small ponds and marshes in Section 15, 16, 21, and 22 of T8N, R6W PMM are unique to this part of Montana and will be protected in project design and implementation.	Standard does not apply to No Action, but does apply to the Proposed Action and is met. Riparian best management practices would be followed.

Management Standards	If Standard applies, how is standard being met
Management Area T5	
Description - This management area consists of suitable timber stands interspersed with natural openings, generally with existing livestock allotments. Forage is provided by natural meadows and transitory range. The area consists of mostly Douglas-fir, with some lodgepole pine. It encompasses lower elevations and dry sites on the Forest usually on the fringes of native grasslands.	**Management Goals -** Increase production and quality of forage. Manage timber sites cost-effectively, by selecting the most economical harvest system and managing for natural regeneration. Provide for healthy stands of timber and timber products consistent with increasing quality and quantity of forage. Emphasize cost-effective timber production, while protecting the soil productivity. Maintain water quality and stream bank stability. Provide for other resource uses that are compatible with the other goals.
Recreation – Motorized and nonmotorized dispersed recreation activities are permitted and may be supported by constructing or maintaining trails and trailhead facilities. Existing trails and facilities will be maintained unless they are no longer needed. -Controls over motorized recreation will be implemented where necessary to protect the vegetation, soil, water, and wildlife resources and to prevent road damage.	Motorized and non-motorized dispersed recreation activities would still be permitted with this project. However, short term traffic delays and limited access to parts of the project are maybe needed for safety during project implementation.
Visual – Management practices will generally follow guidelines for the modification VQO. The portions of this area (if any) that are within the sensitive viewing areas of the roads, trails, and areas listed in Appendix B will be managed to meet the more restrictive VQOs noted in the appendix. [See Forest Landscape Management Book, Vol. 2 (Ag. Hdbk. No. 461) for definitions of VQOs and how they are applied.]	The potential direct, indirect, and cumulative effects of the proposed activities to visual resources would be consistent with forest plan direction for visual resources because the application of the landscape rehabilitation management alternative as outlined in the VMS would allow a longer period of time for the retention VQO to be achieved.
Wildlife and Fisheries –Wildlife and fisheries habitat improvement projects may be implemented, provided they are compatible with the management area goals. -Maintain adequate thermal and hiding cover adjacent to forage areas, provided timber harvest volumes are not significantly reduced over the rotation period.	This standard emphasizes improvement of big game habitat of which fragmentation can be a factor. Mule deer, for example, often use edges created by fragmentation since those areas optimize the relationship between forage and cover. Fragmentation, or thinning of forested stands, can render an area unusable by big game if those areas are devoid of screening properties or other features upon which big game depend. The action alternatives include treatments that would increase fragmentation; however, these open forests should provide a mix of forage and shade during the summer for big game. All of the action alternatives are consistent with these standards in terms of maintaining and/or enhancing big game habitat.

Management Standards	If Standard applies, how is standard being met
Range – Livestock grazing will generally be maintained at or above 1983 levels, unless a range analysis indicates there is a need to change. -Vacant allotments will be restocked if a range analysis shows it to be feasible and a demand exists. -Transitory range resulting from timber harvest will be integrated into the allotment planning process. -Intensive management systems will be implemented, where cost-effective, to develop the range resource for sustained forage production. Management systems will be designed to minimize conflicts with wildlife. -Forage improvement projects such as sagebrush burning, tree encroachment burning, and noxious plant control may be carried out on a scheduled basis. The schedule will be developed as part of allotment plans. -Existing structural improvements, such as cattleguards, fences, and watering facilities, will be maintained or reconstructed as needed to continue present levels of grazing. Additional improvements may be built if the need is identified in an approved allotment management plan.	Not applicable because the Telegraph Vegetation Project does not propose any changes to livestock use within the project area.
Timber - This management area is suitable for timber management. - Timber harvest methods include clearcutting, group selection, and shelterwood harvest, but may be modified to favor forage production. Clearcuts will be designed to ensure natural regeneration. Appendix M provides guidance for various vegetative management practices in the habitat groups on the Forest. - Regeneration will be by natural means and will occur within 5 years of final harvest. - As a minimum, a cutover area will not be considered an opening when: (1) a new forest stand is established and certified as stocked, and (2) vegetative conditions reach the point where harvest of additional timber can occur and the combined area can still meet watershed management objectives. - Final entry of a shelterwood harvest may be delayed up to four decades to provide transitory range and to ensure regeneration. - Animal control may be required on a case by case basis to ensure regeneration within 5 years of final harvest.	Not applicable to the Telegraph Vegetation Project because no treatments are proposed in T-5 under any Alternative.
Water and Soils - Timber harvest will not create runoff increases which are likely to result in long term channel degradation. All timber sale proposals will include an analysis of the current and projected status of sediment produced. The project proposal will analyze and evaluate the potential water quantity and quality and soil productivity impacts; mitigation measures should be developed to minimize adverse effects. If a project proposal shows the water quality cannot be maintained, the project will be reevaluated or terminated.	No treatments proposed in T-5.

Management Standards	If Standard applies, how is standard being met
Minerals - Locatable—See Forest-Wide Standards. - Leasable ---- See Forest Plan Amendment #13 for lease standards	Locatable - See Forest-wide Standards and Forest Plan Consistency, Minerals General and Locatable Minerals sections. Leasable - Not applicable to the Telegraph Project as no current oil and gas leases exist within the project vicinity.
Lands – See Forest-Wide Standards.	
Facilities - Roads will be constructed as needed to meet the management area goals. - Where existing trails are intersected by new road construction, the trail will be evaluated to determine if it should be retained on the system or abandoned.	Not applicable to the Telegraph Vegetation Project because no roads are proposed within MA T-5.
Protection - Insect and disease control should emphasize reduction and prevention through timber harvest and timber stand improvement. The use of other approved integrated pest management techniques may be necessary at times. - The appropriate fire suppression response ranges from control to containment in this management area depending upon location, expected fire behavior, and other decision criteria related to values at risk. These decision criteria are stated in the Fire Management Direction in Appendix R. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with planned ignitions may be used in this management area, for the enhancement and maintenance of resource, when within pre-established prescribed fire criteria. These criteria are detailed in the Fire Management Direction in Appendix R. - Fuel reduction methods for activity created fuels include burning, removing residue, or rearranging, such as dozer trampling.	Standard does not apply with respect to Protection. This MA occurs in the Project Area, but no treatments are proposed in T-5 under any Alternative.
Riparian - Generally, harvesting will only occur in riparian areas in conjunction with sale activity on adjacent lands. - In riparian areas, any timber harvest should be on a 240 year rotation and harvest types should be selection or group selection. - See Forest Wide Standards for grazing in riparian.	Standard does not apply with respect to Timber. This MA occurs in the Project Area, but no treatments are proposed in T-5 under any Alternative.

Management Standards	If Standard applies, how is standard being met
Management Area W1	
Description - This management area contains a variety of wildlife habitat ranging from important big game summer range to big game winter range. It has a variety of physical environments including riparian, calving or fawning areas, and hiding cover. All slopes, aspects and elevations are represented as well as a wide variety of vegetation ranging from grasslands to densely timbered areas.	**Management Goals -** Optimize wildlife habitat potential, including old growth, over the long term. Provide for other resource uses, if they are compatible with wildlife management goals.
Recreation – Controls over motorized recreation will be implemented where necessary to protect wildlife habitat values of this area. -Non-motorized dispersed recreation may be supported by constructing trails and trailhead facilities when compatible with management area goals.	Motorized and non-motorized dispersed recreation activities would still be permitted with this project. However, short term traffic delays and limited access to parts of the project are maybe needed for safety during project implementation.
Visual – Management practices will generally follow guidelines for the partial retention VQO. Exceptions may occur on a case-by-case basis to meet wildlife objectives. The portions of this area (if any) that are within the sensitive viewing areas of the roads, trails, and areas listed in Appendix B will be managed to meet the VQOs noted in the appendix. [See Forest Landscape Management Book, Vol. 2 (Ag. Hdbk. No. 462) for definitions of VQOs and how they are applied.]	The potential direct, indirect, and cumulative effects of the proposed activities to visual resources would be consistent with forest plan direction for visual resources because the application of the landscape rehabilitation management alternative as outlined in the VMS would allow a longer period of time for the retention VQO to be achieved.
Wildlife and Fisheries –Wildlife habitat improvement practices, including road management, prescribed fire, and other techniques, will be used to maintain and/or enhance the quality of big game and nongame habitat. -Maintain adequate thermal and hiding cover adjacent to forage areas. Generally this means providing at least 25 percent cover, where available, on identified winter range.	This standard emphasizes improvement of big game habitat of which fragmentation can be a factor. Mule deer, for example, often use edges created by fragmentation since those areas optimize the relationship between forage and cover. Fragmentation, or thinning of forested stands, can render an area unusable by big game if those areas are devoid of screening properties or other features upon which big game depend. The action alternatives include treatments that would increase fragmentation; however, these open forests should provide a mix of forage and shade during the summer for big game. All of the action alternatives are consistent with these standards in terms of maintaining and/or enhancing big game habitat. Several miles of roads will be closed and/or decommissioned under all action alternatives. Prescribed fire goals include improving grass and shrublands which would be beneficial to elk. Alternative 2 would result in the removal of approximately 62 acres of thermal cover; Alternative 3 would result in the removal of 19 acres of thermal cover. Alternative 4 would result in the removal of 64 acres of thermal cover. The removal of thermal cover would actually create openings in areas that are otherwise contiguous which in turn should create forage opportunities for elk. None of these acres occur on winter range. As such, all action alternatives are consistent with this standard.
Range – Livestock grazing generally does not occur in this management area, except for minor amounts within existing allotments. Livestock grazing will continue within active allotments, however, the level may be increased or decreased if monitoring or range analysis show a need or opportunity to change.	Not applicable to the Telegraph Vegetation Project because there are no proposed changes to livestock use in this MA as part of this project.

Management Standards	If Standard applies, how is standard being met
Timber - Timber will be harvested only if it can be used as a tool to maintain or enhance wildlife habitat values. Productive forest land is classified as unsuitable for timber management	Standard does not apply to No Action, but does apply to the Action Alternatives and is met. The bulk of areas to be treated in this MA are proposed for prescribed fire only or hand thinning to meet multiple objectives including the promotion of diverse wildlife habitat. One small area (13 acres within unit 91) is proposed for timber harvest in this MA. This action contributes to the goal of promoting diverse wildlife habitats by creating more vigorous and diverse regeneration and altering the connectivity of large downed fuels.
Water and Soils – See Forest-Wide Standards.	See Forest-Wide Standards.
Minerals – Locatable – Timing of mineral activities will be coordinated where practical with the needs of wildlife. This generally will require negotiations during development of operating plans for no surface occupancy during critical wildlife use. - Leasable ---- See Forest Plan Amendment #13 for lease standards	Locatable - Not applicable to the Telegraph Vegetation Project as no mineral related activities are being proposed in association with this project. This standard is outside the scope of the Project activities being considered. Leasable (see Forest Plan Amendment #13) - Not applicable to the Telegraph Vegetation Project as no current oil and gas leases exist within the project vicinity.
Lands – See Forest-Wide Standards.	See Forest-Wide Standards.
Facilities – Roads will generally not be constructed for surface management activities within this area. Exceptions may occur if needed for wildlife improvement projects. Roads through this area, which provide access to adjacent areas, are permits only if project planning indicates it is the most feasible access. -Road construction should avoid important big game areas, such as wet, boggy areas.	Not applicable to the Telegraph Vegetation Project because no road construction is proposed under the action alternatives.
Protection - Areas will be evaluated periodically for significant insect and disease problems. Endemic levels will be accepted as normal. If epidemic levels develop and control is necessary, the control method should minimize impacts on big game and other wildlife values. - The appropriate fire suppression response ranges from control to confinement in this management area depending upon location, expected fire behavior, and other decision criteria related to values at risk. These decision criteria are stated in the Fire Management Direction in Appendix R. - Prescribed fire with planned ignitions will be used in this management area, for the enhancement and maintenance of resources. - Prescribed fire with unplanned ignitions may be used in this management area, for the enhancement and maintenance of resources, when within pre-established prescribed fire criteria. These criteria are detailed in the Fire Management Direction in Appendix R. - Prescribed fire may be used as a tool to reduce natural fuels and improve quantity and quality of wildlife forage.	Standard does not apply to No Action, but does apply to the Action Alternatives and is met. The area has been evaluated, and the mountain pine beetle outbreak has impacted it to a large extent. In the Action Alternatives treatments would occur to respond to this condition. Refer to Forested Vegetation Specialist Report.
Riparian –See Forest-Wide Standards for grazing in riparian.	

Table B-3. INFISH Standards Columbia River Basin

Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
Timber Management	
TM-1 Prohibit timber harvest, including fuel wood cutting, in Riparian Habitat Conservation Areas, except as described below. a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuel wood cutting in Riparian Habitat Conservation Areas only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other Riparian Management Objectives, and where adverse effects can be avoided to inland native fish. For priority watersheds, complete watershed analysis prior to salvage cutting in RHCAS. b. Apply silvicultural practices for Riparian Habitat Conservation Areas to acquire desired vegetation characteristics where needed to attain Riparian Management Objectives. Apply silvicultural practices in a manner that does not retard attainment of Riparian Management Objectives and that avoids adverse effects on inland native fish.	Fish Specialist Report including design features discusses restrictions on activities and equipment in Riparian Habitat Conservation Areas.

Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
Roads Management	
RF-2 For each existing or planned road, meet the Riparian Management Objectives and avoid adverse effects to inland native fish by: a. completing watershed analysis prior to construction of now roads or landings in Riparian Habitat Conservation Areas within priority watersheds. b. minimizing road and landing locations in Riparian Habitat Conservation Areas. c. initiating development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, address the following items in the plan: Road design criteria, elements, and standards that govern construction and reconstruction. 2. Road management objectives for each road. 3. Criteria that govern road operation, maintenance, and management. 4. Requirements for pre-, during-, and post-storm inspections and maintenance. 5. Regulation of traffic during wet periods to minimize erosion and sediment delivery and accomplish other objectives. 6. Implementation and effectiveness monitoring plans for road stability, drainage, and erosion control. 7. Mitigation plans for road failures. d. avoiding sediment delivery to streams from the road surface. 1. Out-sloping of the roadway surface is preferred, except in cases where out-sloping would increase sediment delivery to streams or where out-sloping is infeasible or unsafe. 2. Route road drainage away from potentially unstable stream channels, fills, and hillslopes. e. avoiding disruption of natural hydrologic flow paths. f. avoiding sidecasting of soils or snow. Sidecasting of road material is prohibited on road segments within or abutting RHCAs in priority watersheds.	Proposed temporary roads are generally in upland locations that would likely not pose a risk of sediment delivery to streams. There are no proposed road/stream crossings associated with temporary roads. Mitigation for this project includes reconstruction and ongoing road maintenance activities that will reduce sediment from existing levels. BMPs would be in place to minimize impacts to any fish bearing habitat. No landings would be located in RHCAs. Snowplowing would be evaluated on the Ontario Creek Road or the Little Blackfoot Road above Ontario Creek Road. Road use during wet periods is addressed in standard timber contract clauses. A summary of design features, BMPs and mitigation measures are included in the Assumptions section of the Fish, Hydrology, and Transportation reports.

Standards	If Standard applies, how is standard being met, and where in the project file is the documentation?
RF-4 Construct now, and improve existing, culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris, where those improvements would/do pose a substantial risk to riparian conditions. Substantial risk improvements include those that do not meet design and operation maintenance criteria, or that have been shown to be less effective than designed for controlling erosion, or that retard attainment of Riparian Management Objectives, or that do not protect priority watersheds from increased sedimentation. Bass priority for upgrading on risks in priority watersheds and the ecological value of the riparian resources affected. Construct and maintain crossings to prevent diversion of stream flow out of the channel and down the road in the event of crossing failure.	Standard would be met. Existing culverts will be replaced as part of this project. . All new culverts will be designed to pass the 100-year flood and provide upstream fish movement. Three of the culverts will replace known barriers to fish movement. BMPs would be in place to minimize impacts to and fish bearing habitat. A summary of design features are included in the Assumptions section of the Fisheries Report.
RF-5 Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams	Under the existing condition, this standard is only partially met. The project specifies the upgrade of several known fish passage barrier crossing structures to allow full aquatic organism passage. Alternative 4 addresses all known barriers in the project area. Under Alternatives 2 and 3, this standard would be closer to being fully achieved than the existing condition, but still partially met. Under Alternative 4, this standard would be fully met once all upgrades were completed. All new culverts will be designed to pass the 100-year flood and provide upstream fish movement. BMPs would be in place to minimize impacts to and fish bearing habitat. Design features are listed in Chapter 2 – FEIS and included in the Assumptions section of the Fisheries Report.
General Riparian Area Management	
RA-3 Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of Riparian Management Objectives and avoids adverse effects on inland native fish.	Herbicide applications will follow guidance from the 2005 Helena Forest Noxious Weed EIS regarding limits of Tordon applied within any specific 6th code hydrologic unit such that the projected levels of herbicide that may reach surface waters will remain below 0.07 parts per million and thereby remain below levels that may affect fisheries.

Table B-4. Consistency with NRLMD objectives, standards and guidelines for the action alternatives[1]

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
ALL MANAGEMENT PRACTICES AND ACTIVITIES (ALL) *The following objectives, standards and guidelines apply to management projects in lynx habitat in lynx analysis units (LAU) and in linkage areas, subject to valid existing rights. They do not apply to wildfire suppression, or to wildland fire use*	
Objective[30] ALL O1 Maintain[26] or restore[39] lynx habitat[23] connectivity[16] in and between LAUs[21], and in linkage areas[22].	The forested character of the area would be retained and connectivity within and between LAUs would be maintained. The project would have no effect upon lynx linkage area and both action alternatives meet ALL O1.
Standard[43] ALL S1 New or expanded permanent developments[33] and vegetation management projects[48] must maintain[26] habitat connectivity[16] *in an LAU[21] and/or linkage area[22].*	The project area is to the west of the continental divide which has been identified as a linkage area in the NRLMD. The project maintains the general forested nature of the action area as well as landscape connectivity permitting broader lynx movements. Planned treatments in Alternative 2 affect 4,859 acres of lynx habitat (32% of habitat in the project area [15,014 acres]; Alternative 3 affects 2,744 acres (18% of mapped lynx habitat); and Alternative 4 affects 5,405 acres (36% of mapped lynx habitat). Connectivity across larger landscapes will not be affected by this project since more than half of the lynx habitat would remain untreated in the action alternatives although the lynx may have to temporarily adjust movement patterns during project implementation. Standard is met.
Guideline[15] ALL G1 Methods to avoid or reduce effects on lynx should be used when constructing or reconstructing highways[18] or forest highways[12] across federal land. Methods could include fencing, underpasses or overpasses.	The project does not include construction or reconstruction of highways or forest highways. Guideline is not applicable.
Standard LAU S1 *Changes in LAU[21] boundaries shall be based on site-specific habitat information and after review by the Forest Service Regional Office.*	LAU boundaries have not been changed. Standard is not applicable.

[1] Superscripts refer to definitions in the glossary of the NRLMD.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
VEGETATION MANAGEMENT PROJECTS (VEG) *The following objectives, standards and guidelines apply to vegetation management projects in lynx habitat in lynx analysis units (LAU). With the exception of Objective VEG O3 that specifically concerns wildland fire use, the objectives, standards and guidelines do not apply to wildfire suppression, wildland fire use, or removal of vegetation for permanent developments like mineral operations, ski runs, roads and the like. None of the objectives, standards, or guidelines apply to linkage areas.*	
Objective VEG O1 – Manage vegetation to mimic or approximate natural succession and disturbance processes while maintaining habitat components necessary for the conservation of lynx.	The action alternatives are designed to mimic landscape patterns and create conditions that would increase the resiliency of the project area to natural disturbance processes.
Objective VEG O2 – Provide a mosaic of habitat conditions through time that support dense horizontal cover and high densities of snowshoe hares. Provide winter snowshoe hare habitat in both the stand initiation structural stage and in mature, multi-story conifer vegetation.	The action alternatives are designed to regenerate dead lodgepole pine which will in turn increase stand initiation habitat in about 15 years post-treatment. Intermediate harvest is designed.
Objective VEG O3 – Conduct fire use activities to restore ecological processes and maintain or improve lynx habitat.	Prescribed fire proposed in the action alternatives is designed to restore appropriate fire regimes to the project area.
Objective VEG O4 – Focus vegetation management in areas that have potential to improve winter snowshoe hare habitat but presently have poorly developed understories that lack dense horizontal cover.	The purpose of the Telegraph project is to be responsive to the mountain pine beetle outbreak in the area; this includes regenerating dead lodgepole pine stands which will give rise to stand initiation habitat and thinning live stands to hasten development of multistory characteristics.
Standard VEG S1 – Stand initiation structural stage limits Standard VEG S1 applies to all vegetation management[48] projects that regenerate[37] timber, except for fuel treatment[13] projects within the wildland urban interface (WUI) [49] as defined by HFRA, subject to the following limitation: Fuel treatment projects within the WUI that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 may occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). For fuel treatment projects within the WUI see guideline VEG G10. **The Standard:** Unless a broad scale assessment has been completed that substantiates different historic levels of stand initiation structural stages[44] limit disturbance in each LAU as follows: If more than 30 percent of the lynx habitat in an LAU is currently in a stand initiation structural stage that does not yet provide winter snowshoe hare habitat, no additional habitat may be regenerated by vegetation management projects.	Approximately 1% (313 acres) of LAU di-03 is identified as 'early stand initiation habitat'; 3% (674 acres) of LAU di-04, and 3% (419) of LAU di-05. Under Alternative 2, an additional 117 acres of mapped lynx habitat would be regenerated in LAU di-03 thereby increasing the percentage of early stand initiation to 2 % (430 acres) in that LAU. An additional 2,504 acres of mapped lynx habitat would be regenerated in LAU di-04 thereby increasing the percentage of early stand initiation to 16% (3,178 acres) in that LAU. LAU di-02 which is adjacent to di-04 to the north is at approximately 5% early stand initiation habitat. Percentages in Alternative 3 are 2% in LAU di-03 and 10% in LAU di-04. Percentages in Alternative 4 are 2% in LAU di-03 and 20% in LAU di-04. There are no treatments in LAU di-05. The percent of early stand initiation habitat in all three LAUs does not exceed 30%. Standard is met. Note: Early stand initiation and stand initiation snowshoe hare habitat are based on field validation and stand diagnoses (in project record). Precommercial thinning units in early stand initiation and stand initiation habitat were dropped from Alternative 4, except in areas proposed for whitebark pine release, outside of the WUI to reflect field validation. If Alternatives 2 or 3 are selected, treatments in early stand initiation and stand initiation habitat would be modified to reflect the field validation used to design Alternative 4 outside of the WUI.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
Standard VEG S2 – Limits on regeneration from timber mgmt. projects Standard VEG S2 applies to all vegetation management[48] projects that regenerate[37] timber, except for fuel treatment[13] projects within the wildland urban interface (WUI)[49] as defined by HFRA, subject to the following limitation: Fuel treatment projects within the WUI[49] that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 may occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). For fuel treatment projects within the WUI[49] see guideline VEG G10. **The Standard:** Timber management projects shall not regenerate[37] more than 15 percent of lynx habitat on NFS lands in an LAU in a ten-year period.	Currently, regeneration harvest in LAU di-03 has occurred on 0.01% of lynx habitat on NFS lands within the past ten years. The Telegraph project would result in the regeneration of 117 acres in this LAU in both Alternative 2 and 4 which increases the percent regenerated in a ten year period to 0.53%. Alternative 3 would result in the regeneration of 86 acres in LAU di-03 for a percent of 0.39%. Currently, regeneration harvest in LAU di-04 has occurred on 0.07% of lynx habitat on NFS lands within the past ten years. The Telegraph project would result in the regeneration of 2,515 acres in this LAU (Alternative 2) which increases the percent regenerated in a ten year period to 13.41%. Alternative 3 regeneration harvest would result in 6.8%; Alternative 4 in 17.74%. There are no project treatments in LAU di-05. Standard is met for all LAUs.
Standard VEG S5 – Pre-commercial thinning limits Standard VEG S5 applies to all pre-commercial thinning[35] projects, except for fuel treatment[13] projects that use pre-commercial thinning as a tool within the wildland urban interface (WUI)[49] as defined by HFRA, subject to the following limitation: Fuel treatment projects within the WUI[49] that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 may occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). For fuel treatment projects within the WUI[49] see guideline VEG G10. **The Standard:** Pre-commercial thinning projects that reduce snowshoe hare habitat, may occur from the stand initiation structural stage[44] until the stands no longer provide winter snowshoe hare habitat only: 1. Within 200 feet of administrative sites, dwellings, or outbuildings; or 2. For research studies[38] or genetic tree tests evaluating genetically improved reforestation stock; or 3. Based on new information that is peer reviewed and accepted by the regional levels of the Forest Service and FWS, where a written determination states: a. that a project is not likely to adversely affect lynx; or b. that a project is likely to have short term adverse effects on lynx or its habitat, but would result in long-term benefits to lynx and its habitat; or 4. For conifer removal in aspen, or daylight thinning[5] around individual aspen trees, where aspen is in decline; or 5. For daylight thinning of planted rust-resistant white pine where 80 % of the winter snowshoe hare habitat[50] is retained; or	There are 65 acres of pre-commercial thinning in early stand initiation habitat and stand initiation habitat in LAU di-03 (Alternative 2 and 4). All acres are within the WUI. There are 34 acres in Alternative 3, all of which are in WUI. There are 1,262 acres of pre-commercial thinning in early stand initiation habitat and stand initiation habitat in LAU di-04 of which 917 are within the WUI and 345 are outside of the WUI (see note). There are 860 acres of pre-commercial thinning in early stand initiation and stand initiation habitat in Alternative 3 of which 561 are within the WUI and 299 are outside of the WUI (see note). There are 850 acres of pre-commercial thinning in Alternative 4 of which 845 are within the WUI. The remaining 5 acres that are outside of the WUI are proposed for whitebark pine release. Standard is met. *Note:* Early stand initiation and stand initiation snowshoe hare habitat are based on field validation and stand diagnoses (in project record). Pre-commercial thinning units in early stand initiation and stand initiation habitat were dropped from Alternative 4, except in areas proposed for whitebark pine release, outside of the WUI to reflect field validation. If Alternatives 2 or 3 are selected, treatments in early stand initiation and stand initiation habitat would be modified to reflect the field validation used to design Alternative 4 outside of the WUI.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
6. To restore whitebark pine.	
Standard VEG S6 – Multi-storied stands & snowshoe hare horizontal cover Standard VEG S6 applies to all vegetation management[48] projects that regenerate[37] timber, except for fuel treatment[13] projects within the wildland urban interface (WUI)[49] as defined by HFRA, subject to the following limitation: Fuel treatment projects within the WUI[49] that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 may occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). For fuel treatment projects within the WUI[49] see guideline VEG G10. **The Standard:** Vegetation management projects that reduce snowshoe hare habitat in multi-story mature or late successional forests[29] may occur only: 1. Within 200 feet of administrative sites, dwellings, outbuildings, recreation sites, and special use permit improvements, including infrastructure within permitted ski area boundaries; or 2. For research studies[38] or genetic tree tests evaluating genetically improved reforestation stock; or 3. For incidental removal during salvage harvest[41] (e.g. removal due to location of skid trails). (NOTE: Timber harvest is allowed in areas that have potential to improve winter snowshoe hare habitat but presently have poorly developed understories that lack dense horizontal cover [e.g. uneven age management systems could be used to create openings where there is little understory so that new forage can grow]).	There are 40 acres of vegetation treatments in multistory habitat in LAU di-03 in Alternatives 2 and 3. There are 80 acres in Alternative 4. All acres are within the WUI. In Alternative 2, there are 1,594 acres of vegetation treatments in multistory habitat in LAU di-04 of which 1,154 are within the WUI and 440 are outside of the WUI. In Alternative 3, there are 832 acres of vegetation treatments in multistory habitat in LAU di-04 of which 534 are within the WUI and 298 are outside of the WUI. In Alternative 4, there are 1,992 acres of vegetation treatments of which 1,452 acres are within the WUI and 539 acres are outside the WUI. Standard is met. Field validation in multistory hare habitat outside of the WUI indicated that the multistory hare habitat is actually in scattered clumps within the larger treatment unit, even though the entire unit may be labeled 'multistory hare habitat'. Prior to implementation, these multistory inclusions would be identified and would remain untreated.
Guideline VEG G1 – Lynx habitat improvement Vegetation management[48] projects should be planned to recruit a high density of conifers, hardwoods, and shrubs where such habitat is scarce or not available. Priority should be given to stem-exclusion, closed-canopy structural stage[44] *stands for lynx or their prey (e.g. mesic, monotypic lodgepole stands).* Winter snowshoe hare habitat[50] should be near denning habitat[6].	Treatments are proposed in stem exclusion and mid-seral lynx habitat in order to promote structure diversity and encourage tree growth and understory development.
Guideline VEG G4 – Prescribed Fire Prescribed fire[34] activities should not create permanent travel routes that facilitate snow compaction. Constructing permanent firebreaks on ridges or saddles should be avoided.	The construction of fire breaks on ridges or saddles would be avoided unless needed to achieve prescribed fire goals.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
Guideline VEG G5 – Habitat for alternate prey species Habitat for alternate prey species, primarily red squirrel[36], should be provided in each LAU.	Some red squirrel habitat may be affected by proposed treatments; however, ample untreated areas remain in the project area in the action alternatives.
Guideline VEG G10 – Fuel treatments in the WUI *Fuel treatment projects in the WUI[49] as defined by HFRA[17, 48] should be designed considering standards VEG S1, S2, S5, and S6 to promote lynx conservation.*	Overall, the project is designed to be responsive to the mountain pine beetle outbreak in the area, promote desirable regeneration, improve conditions for fire suppression effectiveness as well as firefighter and public safety in the area in the event of a wildfire, and maintain diverse wildlife habitats. These goals are compatible with conservation of lynx habitat. The action alternatives have been designed with VEG S1, S2, S5, and S6 in mind. Furthermore, Alternative 3 has been designed to minimize effects to lynx habitat while still meeting the purpose and need of the project.
Guideline VEG G11 – Denning habitat *Denning habitat[6] should be distributed in each LAU in the form of pockets of large amounts of large woody debris, either down logs or root wads, or large piles of small wind thrown trees ("jack-strawed" piles). If denning habitat appears to be lacking in the LAU, then projects should be designed to retain some coarse woody debris[4], piles, or residual trees to provide denning habitat[6] in the future.*	Denning habitat is not lacking in the project area. Because of the mountain pine beetle outbreak there are currently about 50 snags per acre on average in the7-11.9" size class and 9 in the 12-19.9" size class in the project area. These snags will eventually fall to the forest floor creating abundant denning habitat. About 29% of the project area would be treated leaving 71% untreated.
LIVESTOCK MANAGEMENT (GRAZ) *The following objectives and guidelines apply to grazing projects in lynx habitat in lynx analysis units (LAU). They do not apply to linkage areas.*	
Guideline GRAZ G1 – Livestock grazing and openings In fire- and harvest-created openings, livestock grazing should be managed so impacts do not prevent shrubs and trees from regenerating.	Prescribed fire, regeneration, and planting units within grazing allotments would be rested at least one growing season following burning to allow for adequate vegetation recovery.
Guideline GRAZ G2 – Livestock grazing and aspen In aspen stands, livestock grazing should be managed to contribute to the long-term health and sustainability of aspen.	Aspen would be favored in all harvest treatments; if post-treatment monitoring indicates that livestock are impeding the ability of aspen to regenerate, then appropriate measures would be taken to protect aspen regeneration (e.g., fencing).
Guideline GRAZ G3 – Livestock grazing and riparian areas & willow carrs In riparian areas[40] and willow carrs[3], livestock grazing should be managed to contribute to maintaining or achieving a preponderance of mid- or late-seral stages[28], similar to conditions that would have occurred under historic disturbance regimes.	If treatments proposed in the action alternatives result in resource concerns in riparian areas, appropriate measures would be taken to alleviate those concerns.
Guideline GRAZ G4 – Livestock grazing and shrub-steppe habitats In shrub-steppe habitats[42], livestock grazing should be managed in the elevation ranges of forested lynx habitat in LAUs[21], to contribute to maintaining or achieving a preponderance of mid- or late-seral stages, similar to conditions that would have occurred under historic disturbance regimes.	If treatments proposed in the action alternatives result in resource concerns in shrub-steppe habitats, appropriate measures would be taken to alleviate those concerns.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
HUMAN USE PROJECTS (HU) The following objectives and guidelines apply to *human use projects, such as special uses (other than grazing), recreation management, roads, highways, mineral and energy development, in lynx habitat in lynx analysis units (LAU),* subject to valid existing rights. *They do not apply to vegetation management projects or grazing projects directly. They do not apply to linkage areas.*	
Guideline HU G1 – Ski area expansion & development, inter-trail islands When developing or expanding ski areas, provisions should be made for adequately sized inter-trail islands that include coarse woody debris[4], so winter snowshoe hare habitat[49] is maintained.	The project does not include ski expansion or development. Standard is not applicable.
Guideline HU G2 – Ski are expansion & development, foraging habitat When developing or expanding ski areas, foraging should be provided consistent with the ski area's operational needs, especially where lynx habitat occurs as narrow bands of coniferous forest across mountain slopes.	The project does not include ski expansion or development. Standard is not applicable.
Guideline HU G3 – Recreation developments Recreation developments and operations should be planned in ways that both provide for lynx movement and maintain the effectiveness of lynx habitat[23].	The project does not include recreation development. Standard is not applicable.
Guideline HU G4 – Mineral & energy development For mineral and energy development sites and facilities, remote monitoring should be encouraged to reduce snow compaction.	The project does not include mineral & energy development. Standard is not applicable.
Guideline HU G5 – Mineral & energy development, habitat restoration For mineral and energy development sites and facilities that are closed, a reclamation plan that restores[39] lynx habitat should be developed.	The project does not include mineral & energy development. Standard is not applicable.
Guideline HU G6 – Roads, upgrading Methods to avoid or reduce effects to lynx should be used in lynx habitat when upgrading unpaved roads to maintenance levels 4 or 5, if the result would be increased traffic speeds and volumes, or a foreseeable contribution to increases in human activity or development.	Some road reconstruction will occur as part of the action alternatives to improve routes used for hauling. This is primarily to reduce resource damage that may occur during hauling (e.g., erosion and sediment delivery to adjacent streams). Maintenance levels would not be upgraded as a result of these road improvements.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
Guideline HU G7 – Roads, locations New permanent roads should not be built on ridge-tops and saddles, or in areas identified as important for lynx habitat connectivity[16]. New permanent roads and trails should be situated away from forested stringers.	With alternative 3 and 4, approximately 0.7 miles of new permanent roads would be constructed which would relocate a segment of existing road outside of the Little Blackfoot River floodplain. This road location is not in an area identified as important lynx habitat connectivity.
Guideline HU G8 – Roads, brushing Cutting brush along low-speed[25], low-traffic-volume roads should be done to the minimum level necessary to provide for public safety.	Road maintenance would occur along haul routes, including brushing in some instances, for safety purposes.
Guideline HU G9 – Roads, new On new roads built for projects, public motorized use should be restricted. Effective closures should be provided in road designs. When the project is over, these roads should be reclaimed or decommissioned, if not needed for other management objectives.	Temporary roads that would be built in the action alternatives will be closed to public use. Post-project implementation, these roads will be decommissioned.
Guideline HU G10 – Roads, ski area access *When developing or expanding ski areas and trails, access roads and lift termini to maintain and provide lynx security[10] habitat.*	The project does not include ski expansion or development. Standard is not applicable.
Guideline HU G11 – Snow compaction Designated over-the-snow routes, or designated play areas, should not expand outside baseline areas of consistent snow compaction[1], unless designation serves to consolidate use and improve lynx habitat. This is calculated on an LAU basis, or on a combination of immediately adjacent LAUs. This does not apply inside permitted ski area boundaries, to winter logging, to rerouting trails for public safety, to accessing private inholdings, or to access regulated by Guideline HU G12. Use the same analysis boundaries for all actions subject to this guideline.	The project does not include ski expansion or development. Standard is not applicable.
Guideline HU G12 – Winter access for non-recreation SUP & mineral & energy development Winter access for non-recreation special uses, and mineral and energy exploration and development, should be limited to designated routes[8] or designated over-the-snow routes[7].	The project does not include non-recreation SUP or mineral/energy development. Standard is not applicable.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
LINKAGE AREAS (LINK) The following objective, standard and guidelines apply to *all projects within linkage areas,* subject to valid existing rights.	
Standard LINK S1 – Highway or forest highway construction in linkage areas When highway[18] or forest highway[12] construction or reconstruction is proposed in linkage areas[22], identify potential highway crossings.	The project does not include highway or forest highway construction. The standard is not applicable.
Guideline LINK G1 – Land exchanges NFS lands should be retained in public ownership.	The project does not include land exchanges. The standard is not applicable.
Guideline LINK G2 – Livestock grazing in shrub-steppe habitats *Livestock grazing in shrub-steppe habitats[42] should be managed to contribute to maintaining or achieving a preponderance of mid- or late-seral stages[28], similar to conditions that would have occurred under historic disturbance regimes.*	The project is not an allotment management plan. The standard is not applicable.

Appendix C – Cumulative Effects

The area to be analyzed in a cumulative effects analysis is not always limited to the project area, and it varies with the resource or species being analyzed. Each resource will have different “boundaries” for its effects analysis. Quantified, detailed information regarding effects, leading to specific reasoned conclusions can be found in the cumulative effects section of each specialist report located in the project record. The following tables of past, present, and reasonably foreseeable projects have been used by the interdisciplinary team members in determining the cumulative effects for their respective resource. Each resource specialist has determined which of the following activities are applicable to their analysis, depending on their cumulative effects boundary. Some resource reports may mention a project that is missing from this table, however the “hard look” for analysis purposes has been taken.

Table C-1 displays the Past Vegetative and Fuels Activities which have influenced the existing condition. The areas considered include the Telegraph Vegetation Project Area and the larger Telegraph Combo Boundary (largest geographic extent which any resource uses for analysis). Vegetative and fuels activities are sorted by decade. Harvest and fuels records prior to 1950 are generally not available. Harvest activities are sorted by intermediate and regeneration treatments. “Fuels Activities” includes activities such as prescribed fire, hand slashing, pile burning, and wildfire with fuels benefits. **Timber harvest and/or fire acres often overlap on the same piece of ground; the acres reported here reflect additively such multiple entries**. For example, one 30-acre stand may have a harvest treatment, followed by slashing, and later an underburn; this sequence would be reported as 90 acres of activities. However, the actual “footprint” of activities is actually smaller. GIS databases provide clarification on the actual footprint of activities.

Table C-2 reflects present and ongoing projects and activities. These projects are in the implementation phase.

Table C-3 displays reasonably foreseeable projects. These projects are still in the planning phase, which means there is potential for change due to public input, changed conditions, etc.

Past, present, and reasonably foreseeable activities are displayed as being located either in the project area, combo boundary, or crossing over both boundaries. Because the project boundary is totally encompassed by the combo boundary, any activity shown as being only in the project boundary would also count as an activity within the larger combo boundary. The activities that are checked as being within both the project and combo boundary are activities that crossed or occurred within both boundaries.

Table C-1. Past vegetative and fuels activities/projects

Activity/Name	Decade/Yr	Scope of Activity	
Pre 1960			
Forest Service Timber Harvest	Pre 1960	**Telegraph Project Area** Regen Harvest: 25 acres Intermediate Harvest: 0 acres Total: **25 acres**	**Telegraph Combo Boundary** Regen Harvest: 25 acres Intermediate Harvest: 0 acres Total: **25 acres**
Fuels Activities	Pre 1960	**Telegraph Project Area** Total Fuels acres: **0 acres**	**Telegraph Combo Boundary** Total Fuels acres: **0 acres**
1960–1969			
Forest Service Timber Harvest	1960–1969	**Telegraph Project Area** Regen Harvest: 880 acres Intermediate Harvest: 180 acres Total: **1,060 acres**	**Telegraph Combo Boundary** Regen Harvest: 1,936 acres Intermediate Harvest: 214 acres Total: **2,150 acres**
Fuels Activities	1960–1969	**Telegraph Project Area** Total Fuels acres: **329 acres**	**Telegraph Combo Boundary** Total Fuels acres: **606 acres**
1970–1979			
Forest Service Timber Harvest	1970–1979	**Telegraph Project Area** Regen Harvest: 1,019 acres Intermediate Harvest: 50 acres Total: **1,069 acres**	**Telegraph Combo Boundary** Regen Harvest: 1,143 acres Intermediate Harvest: 50 acres Total: **1,193 acres**
Fuels Activities	1970–1979	**Telegraph Project Area** Total Fuels acres: **268 acres**	**Telegraph Combo Boundary** Total Fuels acres: **268 acres**

Activity/Name	Decade/Yr	Scope of Activity	
1980–1989			
Forest Service Timber Harvest	1980–1989	**Telegraph Project Area** Regen Harvest: 1,007 acres Intermediate Harvest: 65 acres Total: **1,072 acres**	**Telegraph Combo Boundary** Regen Harvest: 1,845 acres Intermediate Harvest: 229 acres Total: **2,074 acres**
Fuels Activities	1980–1989	**Telegraph Project Area** Total Fuels acres: **552 acres**	**Telegraph Combo Boundary** Total Fuels acres: **7,338 acres**
1990–1999			
Forest Service Timber Harvest	1990–1999	**Telegraph Project Area** Regen Harvest: 825 acres Intermediate Harvest: 87 acres Total: **912 acres**	**Telegraph Combo Boundary** Regen Harvest: 839 acres Intermediate Harvest: 87 acres Total: **926 acres**
Fuels Activities	1990–1999	**Telegraph Project Area** Total Fuels acres: **1,453 acres**	**Telegraph Combo Boundary** Total Fuels acres: **2,966 acres**
2000–2009			
Forest Service Timber Harvest	2000–2009	**Telegraph Project Area** Regen Harvest: 0 acres Intermediate Harvest: 0 acres Total: **0 acres**	**Telegraph Combo Boundary** Regen Harvest: 0 acres Intermediate Harvest: 35 acres Total: **35 acres**
Fuels Activities	2000–2009	**Telegraph Project Area** Total Fuels acres: **19 acres**	**Telegraph Combo Boundary** Total Fuels acres: **71 acres**

Activity/Name	Decade/Yr	Scope of Activity	
2010–2015			
Forest Service Timber Harvest	2010–2015	**Telegraph Project Area** Regen Harvest: 48 acres Intermediate Harvest: 188 acres Roadside Hazard Tree Removal: 665 acres Total: **901 acres**	**Telegraph Combo Boundary** Regen Harvest: 59 acres Intermediate Harvest: 665 acres Roadside Hazard Tree Removal: 772 acres Total: **1,465 acres**
Fuels Activities	2010–2015	**Telegraph Project Area** Total Fuels acres: **236 acres**	**Telegraph Combo Boundary** Total Fuels acres: **832 acres**
Timber Harvest on Private and other non FS ownership (acres are approximated based on GIS)	2005–2015	**Telegraph Project Area** Timber Harvest: 98 acres Total: **98 acres**	**Telegraph Combo Boundary** Timber Harvest: 1,948 acres Total: **1,948 acres**

Table C-1a. Additional Past Activities/Projects (excluding harvest, fuels)

Past Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Area	Combo Boundary	
Banner Creek Bridge #1	2014		X	Deck and curb replacement.
EPA-Little Lilly/Lee Mountain Complex removal and reclamation	2013		X	Mine waste removal and reclamation. Also installed groundwater monitoring wells to evaluate arsenic levels pre and post removal.
Sally Anne Road	2010–2011		X	Aquatic Organism Passage Legacy Road: Road 527 replace undersized Sally Anne culvert with a 12-foot span by 4-foot rise by 40 feet long three-sided concrete box culvert.
National Guard High Elevation Helicopter Landing Training	2010	X		MT National Guard requested to conduct helicopter pilot training at various peaks on the Helena National Forest as well as water bucket training. Red Mtn., Treasure Mtn., Negro Mtn., Hog Back, and Lava Mtn.
MT Army National Guard	2010		X	Permit for winter survival training on MacDonald Pass.
Tree Farmer Road	2010		X	Resource Advisory Council: Phase I Road 314 reconstruct 2.4 miles; 4 inches new surface aggregate for 1.8 miles; construct 2 drain dips; install 2 new 18-inch culverts. Phase II Road 314 reconstruct road for 1 mile; new surface aggregate for 1.2 miles; construct 2 drain dips
Minnehaha Road	2010	X	X	Legacy Road: Road 527 recondition 4.9 miles, construct 3 drain dips; 4 inches new surface aggregate on 1.15 miles; install 36 new 18-inch culverts; replace 2 undersized culverts with larger culverts
Hahn Creek Roads	2010	X		American Restoration and Recovery Act: Road 495 replace undersized Hahn Creek culvert with a 123-inch span by 83-inch rise by 40-foot corrugate steel pipe arch. Road 1856 replace undersized culvert with a 123-inch span by 83-inch rise by 40-foot corrugate steel pipe arch

Past Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Area	Combo Boundary	
Telegraph Creek Roads	2009–2010	X		American Restoration and Recovery Act: Road 495 reconstruct 4.1 miles; 4 inches new surface aggregate for 4.1 miles; dust palliative 1.4 miles; install 24 new 18-inch culverts; replace 5 undersized culverts with larger culverts Road 1856 install 7 new culverts; replace 4 undersized culverts with larger culverts Road 1857 install 7 new culverts
Little Blackfoot Roads	2010	X	X	American Restoration and Recovery Act: Road 227 recondition 6 miles; 4 inches new surface aggregate for 6 miles; dust palliative 6 miles; install 8 new 18-inch culverts; install 1 new 24-inch culvert; raise roadbed 2 feet' for 200 feet just south of Hat Creek to protect roadway during spring runoff
Thomas Brothers Lumber	December 2009	X		Hat Creek and Little Blackfoot – Commercial Road Use Permit
U.S. Hwy 12 Improvements	October 2009		X	Removal of vegetation (4 to 5 log truck loads), installation of guard rails, erosion protection, and sanding/salting.
Continental Divide Trailhead (CDNST)	July 2009	X	X	Construction of approximately 7 miles of new CDNST to reroute the trail to the Continental Divide. This new segment connects to the Bison Creek Area where the CDNST trail leads onto the neighboring Beaverhead-Deerlodge National Forest.
North Pasture Division Fence	March 2006	X		Installation of this fence enabled the permitee to get better cattle distribution in the eastern portion of the pasture that did not receive very much use until this fence was installed. In addition, it helped keep cattle off the Frog Pond areas as well as off Elliston Creek. It also shortened the season of use for two parts of the pasture
Continental Divide Trailhead and Connector Trail	August 2005		X	Construction of trailhead and approximately ½ mile of new road to access the trailhead and approximately ½ mile of connector trail to tie in with the existing Continental Divide National Scenic Trail

Past Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Area	Combo Boundary	
North Western Corporation Moose Creek Utility Extension	February 2004		X	This decision authorized the North Western Corp. the installation, use and maintenance of a 0.6kV buried power line in the Moose Crk drainage. This action includes a 30-foot power line and power pole.
Jericho Mountain Continental Divide Trail Reroute	April 2003	X	X	This decision implemented new trail construction of approximately 2.2 miles of the CDNST #337 to align the trail to the Continental Divide as per Agency guidance.
Telegraph Cr. Rd. 495 Surfacing and Drainage	2000	X		Road 495 recondition 8.4 miles; 12 inches grid-rolled aggregate for 2.25 miles; 4 inches surface aggregate for 0.48 mile; construct 9 drain dips.
Commercial road use permits	1994–2000	X		These permits were issued for short term commercial use of Forest Service Roads. [D and G Lumber (2000), Minihaha Creek (1997), Bullion Parks/Telegraph Creek (1994), Stowe (1994),
Senecal Private Road	2002		X	Authorization of about 500 feet of private road on NFS lands using a private road special use permit allowing use and maintenance of the access right-of-way.
Rock Creek Buffalo, Inc. Private Road	2000	X		A private road special use permit was issued to D and G Lumber, Inc. authorizing the reconstruction, use, and maintenance of approximately 700 feet
Recreational special use permit	1998–2002	X		These permits are issued for short-term use on public lands for recreational activities/gatherings. MT DOC (1998), Society for Creative Anachronism (2002), Elliston VFD (1998)
Special Use Permit to the Montana Department of Corrections and Aspen Youth Alternatives (AYA)	1998	X	X	This temporary special use permit was issued to the Montana Department of Corrections for institutional outfitting provided by AYA. The outfitting occurred in the Little Blackfoot Area. Yurts were installed at Monarch Creek Trailhead and the Little Blackfoot Meadows Trailhead.

Past Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Area	Combo Boundary	
Monarch Creek Trail Reconstruction	June 1998	X	X	Construction/reconstruction of the non-motorized Monarch Creek Trail #362 in the Electric Peak Roadless Area. Work includes installation of 65 water-bars, 3 wooden stock bridges, and 3 French drains; reconstruction of 5 switchbacks; construction of a turnpike approximately 25 meters long, obliterate approximately 727 meters of abandoned trail, and grub approximately 560 meters of existing trail.
Treasure Mountain Snowmobile Trail Relocation	November 1997	X		This decision approved relocating segments of the groomed snowmobile trail in the Treasure Mountain area. Segments included Little Blackfoot River Road, Road 1857-A1, Road 1857, Road 1857-D1, Road 1859 to the Telegraph Creek Road. Another section starts on Road 1857 at the junction with Road 1857-B1 and proceeds on Road 1857-B1 to Ontario Creek Road 123.
Montana Bureau of Mines and Geology Seismic Monitoring Station	July 1995		X	Installation, use, and maintenance on a seismic monitoring station on lands administered by the Helena Ranger District.
Issuance for Mining Plan of Operations	1989–1993	X	X	Irish Hill-Phleps Dodge Mining Co. (1993): exploratory drilling on ridge between Trout Creek and Spotted Dog Creek drainages; Clemmer Gulch and O'Keefe Mountain (1992): headwaters of Telegraph and Ontario Creek drainages, eight drill sites with 60x60-foot drill pads with approximately 2 acres of surface disturbance; Phelps Dodge Karger II (1990): exploratory drilling with reclamation work; Karger Lode (1989): exploratory drilling with reclamation work; Phelps Dodge Mining Co. (1989): EA conducted
Minnehaha Trail Project	September 1991		X	Decision authorized the development of a trail route between the Moose Creek work center and Road 527 using an old abandoned railroad bed. Activities included construction of a bridge, installing a culvert, pruned trees and shrubs, removed rocks, and relocated power poles off the railroad bed.
Hat Creek Cattle and Horse Allotment	November 1990		X	This was an updated allotment management plan for the Hat Creek Cand H allotment. This involved the incorporation of two sections of land from the adjacent Spotted Dog/Trout Creek allotment and the implementation of a three pasture deferred rotation system. Approximately 5 miles of barbed wire fence was also constructed.

Past Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Area	Combo Boundary	
MacDonald Pass Cattle and Horse (Cand H) Allotment	November 1990		X	This was an approved updated allotment management plan for the MacDonald Pass C and H allotment. This involved the implementation of a three-pasture deferred rotation system and construction of approximately 0.5 mile of barbed wire fence.
Rimini Abandoned Mine Reclamation Project Drilling of Water Quality Monitoring Well	July 1988		X	Approved a plan to drill a well for sampling groundwater quality near Ten-Mile Creek.
Road Drainage Repairs	Completed 2009	X	X	Roads 123, 227, 495, 495-D1, 495-E1, 527, 1856, 1856-D1, 1856-E1, 1856-J1, 1857, 1857-D1, 1863, 1863-A1 and 4104; Blading 43.2 miles, construct drain dips 231
Kading Campground	2010-2011		X	A culvert near the campground entrance has been replaced with a bridge that meets 100-year flood requirements. Beetle infested hazard trees have been removed in Kading CG and around Kading Cabin for visitor safety. Shrubs and trees have been planted to improve aesthetics. Camping spurs have been lengthened and widened with some converted to pull-through spurs. New picnic tables and fire rings have been installed throughout the campground and at Kading Cabin to American Disability Act (ADA) standards. Pathways to the existing vault toilets have been widened and improved to ADA standards. Curb stops have been installed and a new visitor information kiosk has been erected at the campground entrance. A single-panel kiosk has been installed at the nearby Blackfoot Meadows Trailhead.
Kading Road	2011		X	Aquatic Organism Passage Legacy Road: Road 227 replace undersized Kading Creek culvert with a 30-foot span by 26-foot wide concrete bridge
Spotted Dog Land Purchase	2010		X	In 2010, the State Of Montana purchased 27,616 acres of land from Rock Creek Cattle Co. The land is now being managed by Montana Fish Wildlife and Parks as a Wildlife Management Area.
EPA- Luttrell Repository	2015		X	2014 and 2015: A 2-year work plan is being implemented so that the cost of opening Luttrell Repository and treatment of waste water resulting from opening the repository can be saved and used to further remedial actions: this approach requires consolidation of mine waste into stockpiles to be hauled to

Past Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Area	Combo Boundary	
				Luttrell Repository in 2015. In 2014, EPA conducted clearing and grubbing so as to establish transport roads for Off-road Waste Hauling Vehicles at the National Extension mine waste site (most accessible from the Basin Side and near the ridge) and the Bunker Hill mine group (located South of Rimini).
Helena Mineral Society-Crystal Mine	Unknown	X	X	Sally Ann Creek. T8N, R6W, Section 2
Monarch Mineral Sampling	Unknown	X		Mineral sampling and exploration activities to collect samples for testing from unprocessed mine material piles.

Table C-2. Present and Ongoing Activities

Present and Ongoing Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Boundary	Combo Boundary	
7 Private road special use permits	Ongoing	X	X	These permits were issued to private landowners to access their private land on roads that are primarily not open to public use and some have seasonal closures. Of the 7 permits within the combo boundary, 3 are located within the smaller project boundary.
1 Recreation Residence Tract	Ongoing	X	X	Residences are authorized under a 20-year Special Use Permit. Lots are typically 1 acre or less in size. These cannot be utilized as a primary residence and can only be used less than six months in a calendar year. One recreation residence is permitted within the Moose Creek VillaTract that falls within the combo boundary.
2 Campgrounds 1 Day Use Areas 2 Rental Cabins	Ongoing		X	Campgrounds are open seasonally from May through October and include: Kading and Moose Creek. Day use areas: Continental Divide Trailhead. Rental Cabins: Kading and Moose Creek
Routine Use and Maintenance of Non-motorized Forest Trails for Summer Use	Ongoing	X	X	There are some non-motorized trails in the Ten Mile Drainage including the Switchback Ridge Trail. Other areas: Continental Divide National Scenic Trail, Little Blackfoot Meadows trail, Monarch, and Larabee Gulch. These trails receive routine maintenance and clearing of debris annually.
HMO closures on the Helena Ranger District	Ongoing	X	X	Access controls or the permanent closure of mine opening on the Helena Ranger District to ensure public safety. Closures will take place at multiple locations across the Helena Ranger District.

Present and Ongoing Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Boundary	Combo Boundary	
Routine Use and Maintenance of Forest trails and areas for over-snow winter use	Ongoing	X	X	The former Quigley Group Use Area/Campground is sometimes used by cross-country skiers. The former Moose Creek Group Use Area is utilized as a snowmobile trailhead accessing a trail system that connects to Bullion Parks over to Jericho Mountain and down along the Hahn Creek Road tying into the Little Blackfoot Road and Kading Cabin /Limburger Springs areas. There is also a snowmobile trailhead located off of the Little Blackfoot Road near the Lions Sunshine Camp. Please refer to the Divide Travel Plan alternative maps for specific trail locations and areas open to over-snow use.
MacDonald Vista Point	Ongoing		X	This vista point is located to the south of MacDonald Pass and is a popular observation site. It accesses the Continental Divide National Scenic Trail. During the winter months, this area has been utilized for non-motorized environmental education programs.
Special Recreation Use Permit Helena Lion's Sunshine Camp	Ongoing	X		This authorization is classified as an Organizational Camp issued to the Helena Lion's Club to manage and operate the Lion's Sunshine Camp located in the Blackfoot River drainage on NFS lands. The camp provides recreational opportunities in a rural environment to families and youth-oriented groups. This camp has been under a special use permit since 1943. (use code 113)
Electronic Sites south of Hwy 12 on MacDonald Pass	Ongoing		X	The south site retains one authorized airport beacon near the Vista Point overlook.
Routine Use and Maintenance of Open Forest Roads	Ongoing	X	X	Routine maintenance not necessarily annually includes blading, brushing, culvert cleanout, etc. Use of Forest Roads varies by route and season.
Power Utilities, Phone Utilities, Yellowstone Gas Pipeline, and Touch America Fiber Optic Lines	Ongoing		X	Utility lines are authorized under the terms of a special use permit. The gas and fiber optic line are co-located. Routine maintenance are accepted and understood under the terms of the permit. Located at and near MacDonald Pass.
3 Natural Resource Conservation Service Snotel Sites under a special use permit	Ongoing		X	The NRCS maintains three sites for monitoring snow depth and water content under a special use permit. They are located near Ten Mile Creek.

Present and Ongoing Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Boundary	Combo Boundary	
Timber Harvest on Private or other non FS lands.	Ongoing	X	X	Timber harvest may occur on private lands on unspecified acres, primarily tractor logging within the planning area
Noxious Weed Treatment on National Forest Lands	Ongoing	X	X	Herbicide treatment is primarily along roads and in patches that are accessible to mechanized equipment (spraying with ATVs) and/or by hand, biological (insects), goats/sheep, and aerial spraying. Treatment areas are identified in the EIS/ROD and are continually updated and treated as new infestations are located.
Grazing Activities on Private Lands	Ongoing	X	X	Grazing of cattle, sheep and horses on private lands within the Telegraph Project and Combo boundary. This may result in impacts to riparian vegetation, stream banks, and upland vegetation. There will also be results to vegetation management, forage production, and economic well-being.
Dog Creek Grazing Allotment	Ongoing		X	1,729 acres within the combo boundary; 80 permitted cow/calf pair; 92 permitted use days; start of permit is in July; resides west of the divide for season-long grazing. Data collected 2009. Grazing permits are issued on a 10-year cycle.
Hat Creek C and H Grazing Allotment	Ongoing		X	74 acres in the project area, 8,207 within combo boundary; 140 permitted cow/calf pair; 102 permitted use days; start of permit in late June; resides west of the divide and is under a deferred grazing system. Data collected 2009. Grazing permits are issued on a 10-year cycle.
MacDonald Pass Grazing Allotment	Ongoing		X	3,077 acres within the combo boundary; 104 cow/calf pair; 115 permitted use days; start of permit in late June; resides on both sides of the divide and is under a deferred grazing system. Grazing permits are issued on a 10-year cycle.
Slate Lake C and H Grazing Allotment	Ongoing		X	827 acres in the project area, 9,331 acres within the combo boundary; 205 permitted cow/calf pair; 92 permitted use days; start of permit in mid June; deferred grazing system; resides west of the divide. Data collected 2009. Grazing permits are issued on a 10-year cycle.

Present and Ongoing Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Boundary	Combo Boundary	
Spotted Dog Grazing Allotment	Ongoing		X	8,453 acres within the combo boundary; 245 permitted cow/calf pair; 102 permitted use days; start of permit is in July; resides west of the divide for season-long grazing. Data collected 2009. Grazing permits are issued on a 10-year cycle.
Tenmile Priest Pass Cand H Grazing Allotment	Ongoing	X	X	1,730 acres in project area, 5,816 acres within the combo boundary; 200 permitted cow/calf pair; 107 permitted use days; start of permit mid June; rest rotation; resides on both sides of the divide. 2003 Contract for the Priest Pass and Black Mountain allotments, range conditions and weed inventories were completed under a contract. In 2009 proper functioning condition was reached on Mike Renig. Grazing permits are issued on a 10-year cycle.
Rimini Substation	Ongoing		X	Baxendale Fire Dept. is proposing to pour a concrete slab and construct a 3-bay fire station to store firefighting equipment and to utilize existing underground tanks for filling fire engines during suppression activities.
10-Mile EPA Reclamation	Ongoing-2010		X	Reclamation/removal of mine waste contaminated soil. Individual removal projects will continue in the Tenmile drainage for several years. Some of the contaminated soil removed will be transported to the Luttrell Repository via National Forest System roads.
University of Montana-Helena Outfitter/Guide Permit	Ongoing	X	X	Permit issued for a variety of guided recreational activities in numerous locations on the Helena Ranger District.
Red Mountain Flume/Chessman Reservoir Project	Ongoing		X	Currently implementing a fuel reduction project around Chessman Reservoir and the associated water flume infrastructure. Treatments are designed to reduce hazardous fuels around existing infrastructure. Approximately 500 total acres of fuels treatments and harvest are expected.
Personal Use Firewood and Post and Pole permits	Ongoing	X	X	Approximately 3 million board feet of wood is sold across the Helena National Forest yearly under personal firewood or post and pole permits. A portion of this volume comes from the project and combo boundary.

Present and Ongoing Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Boundary	Combo Boundary	
Ten Mile Road Improvement Project (County Route 695) also known as Rimini Road.	Ongoing		X	Improve road way from the junction with Hwy 12 to the junction with the Chessman Reservoir intersection, just over 6 miles in length. Improvements would include replacement of three bridges and associated railings, bridge drainage improvements, upgrading road signs, re-alignment of road segments, and paving.
Northwestern Energy Powerline	Ongoing		X	Hazard tree removal along powerline corridor in Tenmile drainage and MacDonald Pass.
Divide Travel Plan	Ongoing	X	X	The Helena National Forest signed the Divide Travel Plan in 2016, and will begin implementation in 2016.
East Deer Lodge Valley Landscape Restoration Management Project	Estimated Implementation 2016		X	Beaverhead-Deerlodge NF. Purpose is to achieve Forest Plan Goals including timber management, aquatic improvement, and wildlife habitat improvement. Proposed activities include timber salvage, commercial thinning, sediment reduction, fish passage, road and trail decommissioning. Project includes 2,038 acres of commercial harvest, 340 acres of commercial thinning and commercial harvest, and 162 acres of commercial thinning.

Table C-3. Reasonably Foreseeable Activities

Reasonably Foreseeable Project or Activity Name	Decision Date and/or Status	Location		Brief Description
		Project Boundary	Combo Boundary	
North Divide Restoration (NDR)	Estimated Implementation 2016	X	X	The Helena National Forest will begin the small NEPA planning process for the NDR in 2016 with planned implementation the same year.
Tenmile-South Helena	Estimated Implementation 2017		X	The purpose of the project is to maintain consistent quantity and quality of water within the municipal watershed and improve conditions for public and firefighter safety across the landscape in the event of a wildfire. Approximately 24,308 acres are proposed for treatment which would include a combination of commercial harvest of trees, non-commercial vegetation treatments, rearrangement of fuels, and prescribed fire.
Lily Orphan Boy	Implementation is planned for 2016	X		Department of Environmental Quality mine waste removal. This will involve the removal of 4,000 yards of contaminated soil and restoration of a stream channel. National Forest System roads will be utilized to deliver the contaminated soil to the Luttrell Repository.
Blackfoot #1	Planning will begin in 2016	X		Trout Unlimited will be conducting site investigations, engineering evaluations/cost analysis on restoration work along the Little Blackfoot River.

Appendix D – Wildlife Appendices

Wildlife Appendix A – Wildlife Analysis Approach

Table D-A-1 describes how each wildlife parameter is addressed. Some of the parameters have been described in detail in the report, while others are either assumed to be unaffected by the Telegraph Project or are assumed to be addressed under other parameters. Table D-A-1, below, provides the rationale for the level of analysis applied to each wildlife parameter.

Table D-A-1 Wildlife Analysis Approach Table

Wildlife Parameter	Analysis Approach
Wildlife Habitats	
General	The project area comprises several types of wildlife habitats from wetland/riparian habitat to whitebark pine. The Wildlife Specialist Report analyzes in detail effects to wetland/riparian habitats which are most likely to be affected by the project. Other habitats are not analyzed in detail but described in the 'Topics not Analyzed in Detail section. These are: aspen, whitebark pine, mature and early conifer forests, old growth forests, and edges and ecotones.
Habitat Fragmentation	The Continental Divide region of the Helena NF is an inherently fragmented landscape of alternating grasslands and forest with riparian areas serving as focal habitats. These patterns are constantly shifting as a result of natural processes and human enterprises: natural succession, fire, insect outbreaks, climate shifts, timber harvest, livestock grazing, human settlement, water diversion and impoundment, road building. The extent of impacts associated with vegetation management depends on the species, its size, home range, and dispersal habits, as well as the juxtaposition of habitat. Species with small home ranges and limited mobility generally are more susceptible to the barriers and subsequent fragmentation associated with vegetation management. The Wildlife Specialist Report analyzes project effects to habitat fragmentation.
Travel Corridors and Linkage Zones	The Divide has always been an inherently fragmented landscape of alternating grasslands, forests, and local riparian sites. Historically, however, habitats were sufficiently linked by direct connection or proximity that species specialized for one habitat or another (marten or goshawks, for example) were able to move across the landscape. Shifts in habitat patch size and connectivity were generated by fire, insect outbreaks, and other natural phenomena. Since the 1860's, mining, roads, and other long-term human-generated features on the landscape have created rigid movement barriers and impacted riparian areas. These features have reduced the size of habitat patches in which wildlife species are able to operate free from human interference and thus have impeded the ability of a number of species to move through the landscape. The Wildlife Specialist Report analyzes project effects to travel corridors and linkage zones.

Wildlife Parameter	Analysis Approach
Snags and Down Woody Debris	Until recently, large snags and logs have been relatively uncommon over much of the Divide landscape because of the relatively young/middle-aged forest structure (80-120 years old) produced by widespread logging and fires in the late 19th and early 20th centuries. Exceptions have been in pockets of advanced mature and old-growth forest unaffected by historic fire and logging, a few drainages subject to winter kill in the late 1980's (Jericho Mountain, upper Snowshoe Creek, upper Telegraph Creek), and a couple relatively recent mid-sized fires (Beartrap, MacDonald Pass). Numbers of snags and logs have now increased dramatically across the project area as a result of the mountain pine beetle epidemic. Most mortality is occurring in mature lodgepole pine, but whitebark and limber pine are affected as well. The Wildlife Specialist Report addresses this topic.
Noxious Weeds	Noxious weeds impact wildlife by reducing habitat availability where noxious weeds successfully out-compete native vegetation. Weeds are discussed in the Wildlife Specialist Report only as they relate tangentially to other habitat components and processes (elk winter range, ATV off-trail use, livestock grazing, etc.).
Unique Features	Several wildlife species utilize unique features such as cliffs, caves, and talus slopes. These features are not analyzed as a separate topic in the Wildlife Specialist Report; rather, they are analyzed under the respective species that utilizes the unique feature where applicable.
Big Game	
Elk	The elk is a key species on the Helena NF—as an object of public fascination and scrutiny and as a management indicator for other big game species that depend on the same diverse habitat spectrum. Elk make use of a variety of habitats and habitat components, and voluminous research into their use of the landscape provides insights into habitat used by numerous other species. The Forest Plan identifies the components of elk habitat that need to be addressed with regard to vegetation management—primarily, hiding cover on summer range and thermal cover on winter range. Elk and elk habitat are discussed at length in the Wildlife Specialist Report. Additional discussion applicable to elk can be found throughout the Specialist Report, in particular, in sections on Connectivity and Fragmentation and Key Local Areas.
Mule Deer	The mule deer is an adaptable and resilient species. In recent decades population numbers have moved up and down in roughly 20 year cycles. Low points occurred in the 1970s and mid-1990s. As of 2014, populations were once again in decline throughout much of Montana. Nonetheless, mule deer remain widespread and common in the Divide landscape and adjacent non-Forest lands Like elk, mule deer serve as a Forest Plan indicator for big game habitat. Aside from this designation, however, the Forest Plan provides little specific management direction for deer. The Plan assumes that management for elk will take care of the needs of deer. While mule deer exhibit behavior and habitat use patterns somewhat different from those of elk, many key habitat components (productive foraging areas, hiding cover, riparian sites, road density, and human-free areas) are important to both. Consequently, effects analyses for elk are assumed to be valid for elucidating potential effects of the project alternatives on mule deer as well. However, the Wildlife Specialist Report analyzes project effects to mule deer.

Wildlife Parameter	Analysis Approach
Moose	The Shiras moose, a northern Rocky Mountain subspecies, is native to Montana. Moose are be found throughout the Divide landscape, but they are uncommon – a function of their solitary nature coupled with spotted distribution of key habitat around which they focus their activity. Although they move through nearly all types of mountainous habitats, moose seek out productive riparian and subirrigated habitats as foraging sites and spend a large portion of their time there. They will feed on submerged aquatic plants and tall forbs in summer but, above all, they are browsers on tall and mid-sized shrubs. There may be effects of vegetation management on moose. Moose are discussed briefly in the *Topics not Analyzed in Detail* section. Discussions of site-specific project effects on riparian habitat and vulnerability of elk to hunting apply to moose as well.
Bighorn Sheep (sensitive)	Bighorn sheep are have not been identified as resident in the Divide landscape since the early 20th century. The wild sheep, once common, fell victim to early market and subsistence hunting and to disease introduced with domestic sheep. MFWP currently has no plans for reintroduction of bighorn sheep in this area. Sheep are discussed briefly in the *Topics not Analyzed in Detail* section.
Whitetail Deer	As with mule deer, white-tailed deer population numbers tend to cycle periodically; and as with mule deer, their populations are currently in decline in much of the state. A large percentage of whitetail habitat is at lower elevation in riparian areas and valleylands, and thus these deer are much less common on the National Forest than mule deer. Whitetail deer are discussed briefly in the *Topics not Analyzed in Detail* section. Analyses of Elk, Mule Deer, and Riparian Habitats serve as surrogates for project effects on whitetail deer.
Other Hunting and Trapping	Mountain lion and black bear hunting are unique enterprises, each of which requires an individual approach different from what works for elk and deer. But in the end, these species are affected by vegetation management in much the same way as are elk—and the analysis of elk security applies to them as well. Mountain lions and black bears are discussed briefly in the *Topics not Analyzed in Detail* section. See also, the discussion of grizzly bears, road density, and unroaded habitat enclaves.
Threatened, Endangered, and Proposed Species	
Grizzly	In 2002, the northern half of the Divide landscape was classified as a "Grizzly Bear Distribution Zone"—a region outside of the NCDE Recovery Zone in which grizzlies were known to be consistently present. In 2013, the southern half of the landscape was added to the Distribution Zone as well (now the 'Expanded Distribution Zone'). The resident grizzly bear population in this zone appears to be very small, and the bears are seldom observed. The grizzly bear is addressed in the Wildlife Specialist Report.
Canada Lynx	Lynx and lynx habitat occur in the project area. The lynx is addressed in the Wildlife Specialist Report. Effects on lynx are assessed according to standards and guidelines in the Northern Rockies Lynx Management Direction (NRLMD) (2007b)—now a part of the Forest Plan.

Wildlife Parameter	Analysis Approach
Sensitive Species	
Wolf	Wolf packs have occupied the Divide landscape and areas adjacent to it in the valleys and foothills since 1995: 5 packs were known to have been present in this immediate area between 1995 and 2007. Since then, several new packs have formed within reach of the project area, but all have been removed or greatly reduced by USDA Wildlife Services because of their propensity for preying on domestic livestock. A number of wolves have been observed in or near the project area in the last couple years (2010-2014), but evidence of pack formation has been inconclusive. The USFWS and MFWP have monitored all of the known Divide packs intensively, and the movements and actions of these wolves have been well documented. Helena NF biologists have monitored their presence on National Forest lands, particularly with regard to their activity on grazing allotments. There are no known den or rendezvous sites in the project area. Wolves are addressed briefly in the *Topics not Analyzed in Detail* section.
Bald Eagle	No active bald eagle nests have been located on HNF lands in the Divide landscape since the rejuvenation of local eagle populations over the last 3 decades. All known nests near the landscape are in the Little Blackfoot drainage on private land to the west. Most resident eagles on the Forest are located along the Missouri River in the Big Belt Range and along the Big Blackfoot River. No quantitative analysis is needed at this point.
Wolverine	Wolverines are known to exist within the project area. Primary effects associated with the vegetation management include potential disturbance and effects to wolverine habitat. The wolverine is analyzed in the Wildlife Specialist Report.
Fisher	The project area is near the eastern range of fisher habitat. Recently, the U.S. Fish and Wildlife Service (USFWS) announced a 12-month finding on a petition to list a distinct population segment of the fisher in its United States Rocky Mountain Range (USNRM) as endangered or threatened. As part of that effort, the USFWS identified a "presumed" historical and current range of fishers in North America. Their data indicate that fishers most likely were not historically present in the project area. Fishers are addressed briefly in the *Topics not Analyzed in Detail* section.
Black-backed Woodpecker	There has been little habitat capable of sustaining local black-backed woodpecker populations in the Divide landscape in the past century. The last large fires that created an abundance of suitable dead-tree habitat occurred in the late 19th and early 20th centuries. The MacDonald Pass fire in 2009 and the Beartrap Gulch fire in the 1960's created a few hundred acres of local habitat, but these were isolated events. Black-backed woodpeckers were reported in the MacDonald Pass burn in 2010 and 2011. Ongoing bark beetle infestations are creating an abundance of dead tree habitat across the landscape. While this plethora of new snags is proving to be a boon for several woodpecker species (hairy, downy, pileated; flickers) it does not appear to be attracting black-backed woodpeckers as would fire-generated snag arrays. Black-backed woodpeckers are addressed briefly in the *Topics not Analyzed in Detail* section.
Boreal Toad	While boreal toads range through a variety of upland habitats, they concentrate around riparian/aquatic breeding sites. Potential effects, therefore, are assessed primarily in terms of effects to wetlands and riparian habitat. Boreal toads are addressed briefly in the *Topics not Analyzed in Detail* section. See the discussion in the Wetlands and Riparian Habitat section discussed in detail in this report.

Wildlife Parameter	Analysis Approach
Peregrine Falcon	Falcon eyries are located on high cliffs, often near water. Peregrine falcons were extirpated from the Divide landscape in the mid-20th century, and no new occupied eyries have been located in the landscape since the falcons have become re-established in and around the Helena NF (almost entirely in the Big Belt Range) in the early 1990's. No quantitative analysis is needed.
Flammulated Owl	Flammulated owls utilize open park-like conifer forests, especially ponderosa pine. They require an adequate forage base of large insects and a large snag component. There is very little suitable habitat in the project area. Flammulated owls are addressed briefly in the *Topics not Analyzed in Detail* section.
Townsend's Big-eared Bat	These bats inhabit various habitats with caves, tunnels, or trees with loose bark. There is a possibility that they are present in the project area, but none have been found to date. Townsend's bats are addressed briefly in the *Topics not Analyzed in Detail* section. See also the Snags and Woody Debris section discussed in detail in this report.
Northern Leopard Frog	Leopard frogs have not been found in or near the Divide landscape since the early 1990's, and it is likely that they have been extirpated from the area. The analysis of riparian areas will suffice to quantify any potential impacts on leopard frogs, should they be present.
Plains Spadefoot Toad	Spadefoot toads are associated with prairies often with areas of sandy soil or gravel loam (Werner *et al*. 2004 pp. 68-71). They are not known to occur in Divide landscape. Spadefoot toads will not be analyzed further.
Harlequin Duck	Harlequin ducks have never been identified on the Helena NF in the Divide landscape, although they have been reported, rarely, in transit further west on the lower Little Blackfoot River. Harlequin ducks will not be analyzed further.
Northern Bog Lemming	The northern bog lemming has not been identified in the Divide landscape. Nor have any blocks of suitable habitat (sphagnum bogland) large enough to support them been identified. Analyses addressing riparian habitats and other riparian-dependent species will suffice for this species.
Management Indicator Species	
Northern Goshawk	The Forest Plan designates the goshawk as an indicator of old-growth forest, although it is more often found in non-old-growth habitats on the Helena NF. Goshawks maintain large home ranges and make use of a variety of habitats within them. They are most commonly associated with mature forest, and they require closed-canopied mature stands for nesting and successfully fledging young. There are known nest sites and territories within the project area. Known goshawk nesting territories are monitored in the field each year, and active nests are checked as many times as needed to determine nesting success. New territories are monitored whenever they are identified. Because goshawks move to new nest sites each year, it's not possible to always all active nests in a given year, but the presence of goshawks on a territory can usually be verified. The mountain pine beetle outbreak has dramatically affected the configuration of goshawk habitat within the project area (and across the Forest as a whole). The goshawk is analyzed in the main body of the Wildlife Specialist Report.

Wildlife Parameter	Analysis Approach
Pileated Woodpecker	The pileated woodpecker is identified as an old growth-dependent MIS in the Forest Plan. Throughout the Divide landscape, however, pileated woodpeckers are usually found in non-old-growth habitat, with large nesting trees (>30" dbh) being the key habitat component. Availability of insect-prone feeding substrate (typically dead or dying trees) is also important. Observation of pileated woodpeckers is usually fortuitous. The location of observations (of the woodpeckers, by sight or sound, and of their characteristic excavations in trees) are noted and mapped. Observations of pileated woodpeckers are increasing in the Divide landscape as dead trees produced by the mountain pine beetle outbreak continue to proliferate. Pileated woodpecker habitat is analyzed in the main body of the Wildlife Specialist Report.
Hairy Woodpecker	The hairy woodpecker is identified as a snag dependent MIS in the Forest Plan. Hairy woodpeckers are relatively common throughout a variety of habitats in the project area, and their numbers are increasing noticeably in forest stands killed by the mountain pine beetles. They are further analyzed in the main body of the Wildlife Specialist Report.
Marten	The marten is an indicator for the quality of large continuous blocks of mature cover. Marten use mature/ old-growth spruce/fir and lodgepole pine stands for denning. Stumps and downed logs are critical components. Fragmentation of coniferous cover through historical and recent logging and roading has reduced habitat suitability, and trapping has reduced marten numbers directly. Ongoing bark beetle infestation may have mixed implications for marten—increasing the availability of large snags and logs but reducing the availability of mature forest overstory. The primary habitat parameter is the availability of mature forest with abundant coarse woody debris. They are further analyzed in the main body of the Wildlife Specialist Report.

Wildlife Appendix B –Telegraph Project Hiding Cover Methodology and Field Validation

Introduction

The hiding cover analysis for the Telegraph Project utilizes the Montana Department of Fish, Wildlife, and Parks (MFWP) definition included in the Forest Plan (USDA 1986, p. II/18): a stand of coniferous trees having a crown closure of greater than 40 percent. The 40% canopy cover metric is an acceptable 'proxy' for mapping hiding cover as it is generally assumed that stands with 40% canopy cover or greater would in turn provide adequate vertical structure that would hide 90% of an elk at 200 feet, the functional definition of hiding cover. This relationship of canopy cover and stand structure is based on modeling done by Lonner and Cada (1982) and others (e.g., Leckenby et al. 1985, Thomas et al. 1988) who used canopy cover to predict the relationship between hiding cover (as estimated by canopy cover), road densities, and harvest rate the first week of the general hunting season.

Canopy cover is defined as the proportion of the forest floor covered by the vertical projection of tree crowns (Jennings et al. 1999, p. 62) (Figure B-1 [D-B-1]). Canopy cover spatial data used to map hiding cover are derived from R1-VMap based in part on the following documents: the R1 Multi-level Vegetation Classification, Mapping, Inventory, and Analysis System (USDA 2009a), and Region 1 Existing Vegetation Classification System and its Relationship to Region 1 Inventory Data and Map Products (USDA 2011). Canopy cover and crown closure are not synonymous. Canopy cover is described above. Crown closure *"is the proportion of the sky hemisphere obscured by vegetation when viewed from a single point"* (Jennings et al. 1999, p. 62) (Figure B-2 [D-B-2]). Both methods have utility; the method of choice depends on the resource question. Nuttle (1997) suggests that canopy cover may be the more appropriate method for wildlife questions related to the function of trees (i.e., ability to hide an animal), rather than their influence on cover (thermal) or light.

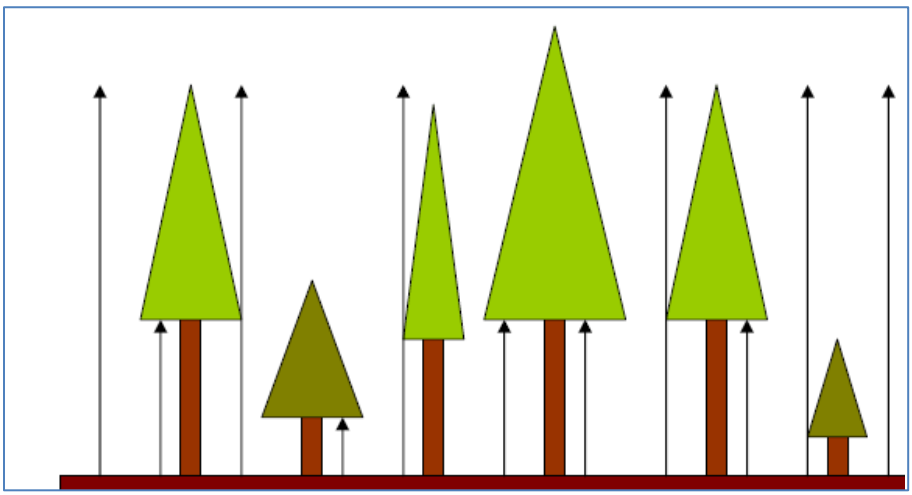

Figure D-B-1. Illustration of canopy cover (from Nuttle 1997 and Jennings et al. 1999)

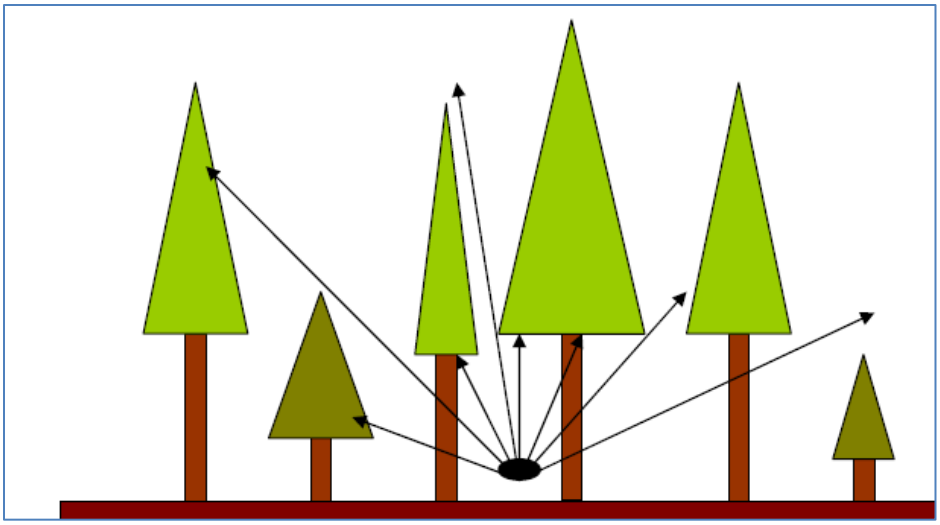

Figure D-B-2. Illustration of canopy closure (from Nuttle 1997 and Jennings et al. 1999)

Specifically, the parameters used to map hiding cover include polygons with ≥ 40% canopy cover and ≥ 40 acres in size (USDA 2009b). Timber harvest or other activities that affect vegetation that have occurred within the last 15 years are removed from consideration as hiding cover even if the canopy cover and patch size criteria are met. This is based on the assumption that the trees within these areas are not tall enough to hide elk. So, even though tree height is not a parameter used to map hiding cover, it is accounted for by removing from consideration as hiding cover those stands within which vegetation management has occurred in the last 15 years.

The specific composition of hiding cover within each of the herd units is summarized in Tables B-1 and B-2 {D-B-1 and D-B-2]. These data show, for example, that a majority of the hiding cover in the both herd unit is comprised of lodgepole pine forests (14,549 acres in Jericho and 29,197 in Spotted Dog – Little Blackfoot). Most of that hiding cover is in the 5-9.9' dbh size class.

Table D-B-1. Composition of Forest Plan hiding cover in the Jericho elk herd unit, tree species, canopy cover, and tree size

Tree Species	Canopy Cover	Tree Size				Total
		0-4.9"	5-9.9"	10-14.9"	>=15"	
Ponderosa Pine	40-59.9%	0	0	24	2	**26**
	>= 60%	0	0	0	0	**0**
Douglas-fir	40-59.9%	0	405	4,216	684	**5,305**
	>= 60%	0	603	2,818	31	**3,452**
Lodgepole Pine*	40-59.9%	367	2,726	547	0	**3,640**
	>= 60%	426	9,496	987	0	**10,909**
Subalpine Fir	40-59.9%	0	68	114	40	**222**
	>= 60%	0	442	428	71	**941**
Spruce	40-59.9%	0	0	9	340	**349**
	>= 60%	0	0	82	540	**622**
Other	40-59.9%	0	22	196	11	**229**
	>= 60%	0	49	63	0	**112**
Total		**793**	**13,811**	**9,484**	**1,719**	**25,807**

*Includes pure and mixed lodgepole pine stands

Table D-B-2. Composition of Forest Plan hiding cover in the Spotted Dog – Little Blackfoot elk herd unit, tree species, canopy cover, and tree size

Tree Species	Canopy Cover	Tree Size				Total
		0-4.9”	5-9.9”	10-14.9”	>=15”	
Ponderosa Pine	40-59.9%	0	0	0	0	**0**
	>= 60%	0	0	0	0	**0**
Douglas-fir	40-59.9%	0	682	8,436	2,246	**11,364**
	>= 60%	0	507	5,409	702	**6,618**
Lodgepole Pine*	40-59.9%	601	6,951	1,179	4	**8,735**
	>= 60%	580	17,840	2,034	8	**20,462**
Subalpine Fir	40-59.9%	0	181	625	96	**902**
	>= 60%	14	962	986	185	**2,147**
Spruce	40-59.9%	0	0	179	833	**1,012**
	>= 60%	0	0	272	1,006	**1,278**
Other	40-59.9%	0	56	266	15	**337**
	>= 60%	0	135	160	0	**295**
Total		**1,195**	**27,314**	**19,546**	**5,095**	**53,150**

*Includes pure and mixed lodgepole pine stands

Field Validation

Methods

Elk hiding cover data have been collected in Telegraph project area since 2009 to (1) validate that 40% canopy cover does provide the functional attributes of hiding cover – i.e., the ability to hide 90% of an elk at 200 feet and (2) validate the premise that even though the MPB outbreak has resulted in canopy cover losses, while the trees remain standing they will continue to provide functional hiding cover.

The following process was used to identify sample points:

1. Random points were generated in GIS. GIS is a geographic information system that integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.
2. Data were collected at each cardinal direction for each point using a cover board. Thus, four measurements were taken at each point (see for example Edge et al. 1987) .
3. The percent of the cover board that was screened was recorded for each measurement.
4. At least one measurement needed to be greater than 90% in order to consider that point ‘capable of hiding 90% of an elk at 200 feet.’

Results

We collected data at 566 points from 2009 through 2013 (Table B-1 [D-B-1]) in the Telegraph project area. Of those, 538 points had at least one measurement that was $\geq$ 90%. This represents 95% of the sample points (Figure B-3 [D-B-3]).

Table D-B-3. Cover board survey results for elk hiding cover 2009–2013

Year	Number of Points Surveyed	Number of Plots that are Capable of Hiding 90% of an Elk at 200 Feet	Percent of 'Capable' Plots
2009–2013	566	538	95%

Our data support that (1) polygons with ≥ 40% canopy cover do provide functional hiding cover most of the time and (2) standing dead trees still function as hiding cover in the absence of canopy cover. This makes sense since it's the vertical and horizontal structure of a stand that provides screening capabilities and not necessarily the canopy cover. The higher Forest Plan threshold associated with the MFWP definition (i.e., 50%) is most likely to account for the fact that some polygons with ≥ 40% canopy cover do not provide hiding cover due to viewing angle, topography, and other factors (Canfield et al. 1986, Edge and Marcum 1991).

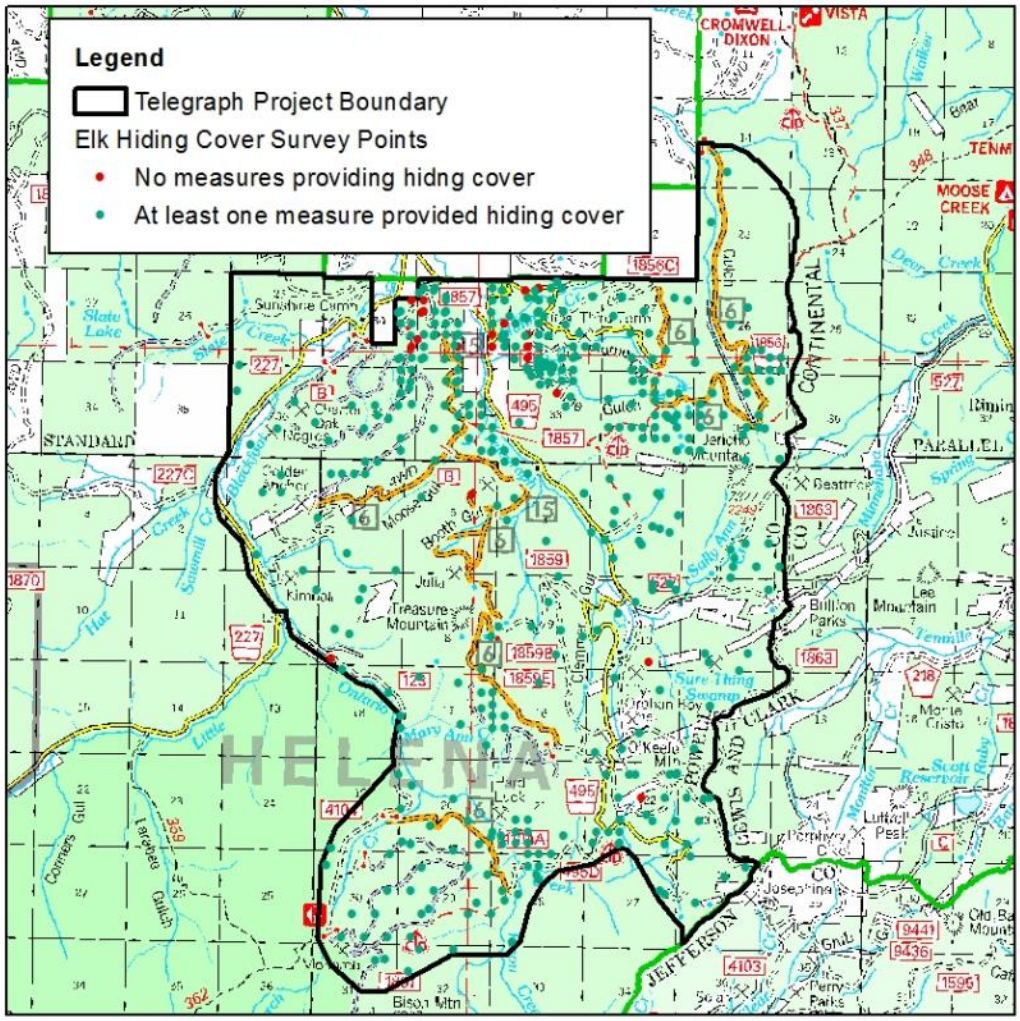

Figure D-B-3. Elk hiding cover survey points in the project area

Potential Hiding Cover

Potential hiding cover is based on existing hiding cover and capable hiding cover – that is, those areas that can develop a dense enough structure to hide 90% of an elk at 200 feet. Existing hiding cover comprises polygons with > 40% canopy cover and > 40 acres in size (USDA 2009b). Timber harvest or other activities that affect vegetation that have occurred within the last 15 years are removed from consideration as hiding cover even if the canopy cover and patch size criteria are met. Capable hiding cover are those polygons not yet classified as hiding cover but, that with time, should produce the requisite hiding cover structure. The following dominance types[2] from R1-VMap are assumed to produce hiding cover in time: Douglas-fir, lodgepole pine, subalpine fir, and spruce (MFWP and USDA Forest Service 2013). Table B-4 [D-B-4] summarizes existing and capable hiding cover in the Jericho and Spotted Dog – Little Blackfoot herd units.

Table D-B-4 Acres of existing and capable hiding cover in the Jericho and Spotted Dog – Little Blackfoot elk herd units

Herd Unit	Acres of Potential Hiding Cover	Acres of Existing Hiding Cover	Acres of Capable Hiding Cover
Jericho	29,350	25,810	3,540
Spotted Dog – Little Blackfoot	62,417	53,149	9,268

The majority of potential hiding cover in both herd units currently comprises existing hiding cover. Twelve percent of the potential hiding cover is considered capable in the Jericho herd unit and 15% in the Spotted Dog – Little Blackfoot herd unit.

[2] Dominance types are determined by the tree species with the greatest abundance of canopy cover, basal area, or trees per acre within a setting or map feature.

Wildlife Appendix B References

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Wildlife Appendix C, Consistency with NRLMD objectives, standards and guidelines for the action alternatives[3]

Table D-C-1. Project consistency with NRLMD objectives, standards, and guidelines

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
ALL MANAGEMENT PRACTICES AND ACTIVITIES (ALL) The *following objectives, standards and guidelines apply to management projects in lynx habitat in lynx analysis units (LAU) and in linkage areas, subject to valid existing rights. They do not apply to wildfire suppression, or to wildland fire use*	
Objective[30] ALL O1 Maintain[26] or restore[39] lynx habitat[23] connectivity[16] in and between LAUs[21], and in linkage areas[22].	The forested character of the area would be retained and connectivity within and between LAUs would be maintained. The project would have no effect upon lynx linkage area and the action alternatives meet ALL O1.
Standard[43] ALL S1 New or expanded permanent developments[33] and vegetation management projects[48] must maintain[26] habitat connectivity[16] *in an LAU[21] and/or linkage area[22].*	The project area is to the west of the continental divide which has been identified as a linkage area in the NRLMD. The project maintains the general forested nature of the action area as well as landscape connectivity permitting broader lynx movements. Planned treatments in Alternative 2 affect 4,859 acres of lynx habitat (32% of habitat in the project area [15,014 acres]; Alternative 3 affects 2,744 acres (18% of mapped lynx habitat); and Alternative 4 affects 5,405 acres (36% of mapped lynx habitat). Connectivity across larger landscapes will not be affected by this project since more than half of the lynx habitat would remain untreated in the action alternatives although the lynx may have to temporarily adjust movement patterns during project implementation. Research has documented many instances of lynx crossing unforested openings (Roe et al. 2000, cited in USDA 2007b, p. 10). Lynx will move across extensive non-forested areas as needed during dispersal or other long-range excursions (Koehler and Aubry 1994, p. 88; Ruediger et al. 2000, p. 1-12; Aubry et al. 1999, p. 379), although they prefer to travel through forested habitats or along forest edges (Squires et al. 2013; Ruediger et al. 2000, ch.1 p.4; Mowat et al. 1999).

[3] Superscripts refer to definitions in the glossary of the NRLMD.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
	Standard is met.
Guideline[15] ALL G1 Methods to avoid or reduce effects on lynx should be used when constructing or reconstructing highways[18] or forest highways[12] across federal land. Methods could include fencing, underpasses or overpasses.	The project does not include construction or reconstruction of highways or forest highways. Guideline is not applicable.
Standard LAU S1 *Changes in LAU[21] boundaries shall be based on site-specific habitat information and after review by the Forest Service Regional Office.*	LAU boundaries have not been changed. Standard is not applicable.
VEGETATION MANAGEMENT PROJECTS (VEG) The *following objectives, standards and guidelines apply to vegetation management projects in lynx habitat in lynx analysis units (LAU). With the exception of Objective VEG O3 that specifically concerns wildland fire use, the objectives, standards and guidelines do not apply to wildfire suppression, wildland fire use, or removal of vegetation for permanent developments like mineral operations, ski runs, roads and the like. None of the objectives, standards, or guidelines apply to linkage areas.*	
Objective VEG O1 – Manage vegetation to mimic or approximate natural succession and disturbance processes while maintaining habitat components necessary for the conservation of lynx.	The action alternatives are designed to mimic landscape patterns and create conditions that would increase the resiliency of the project area to natural disturbance processes.
Objective VEG O2 – Provide a mosaic of habitat conditions through time that support dense horizontal cover and high densities of snowshoe hares. Provide winter snowshoe hare habitat in both the stand initiation structural stage and in mature, multi-story conifer vegetation.	The action alternatives are designed to regenerate dead lodgepole pine which will in turn increase stand initiation habitat in about 15 years post-treatment. Intermediate harvest is designed to accelerate multistory development.
Objective VEG O3 – Conduct fire use activities to restore ecological processes and maintain or improve lynx habitat.	Prescribed fire proposed in the action alternatives is designed to restore appropriate fire regimes to the project area.
Objective VEG O4 – Focus vegetation management in areas that have potential to improve winter snowshoe hare habitat but presently have poorly developed understories that lack dense horizontal cover.	The purpose of the Telegraph project is to be responsive to the mountain pine beetle outbreak in the area; this includes regenerating dead lodgepole pine stands which will give rise to stand initiation habitat and thinning live stands to hasten development of multistory characteristics.
Standard VEG S1 – Stand initiation structural stage limits Standard VEG S1 applies to all vegetation management[48] projects that regenerate[37] timber, except for fuel treatment[13] projects within the wildland urban interface (WUI) [49] as defined by HFRA, subject to the following limitation:	Approximately 1% (313 acres) of LAU di-03 is identified as 'early stand initiation habitat'; 3% (674 acres) of LAU di-04, and 3% (419) of LAU di-05. Under Alternative 2, an additional 117 acres of mapped lynx habitat would be regenerated in LAU di-03 thereby increasing the percentage of early stand initiation to 2 % (430 acres) in that LAU. An additional 2,504 acres of mapped lynx habitat would be regenerated in LAU di-04 thereby increasing the percentage of early stand initiation to 16% (3,178 acres) in that LAU.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
Fuel treatment projects within the WUI that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 may occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). For fuel treatment projects within the WUI see guideline VEG G10. **The Standard:** Unless a broad scale assessment has been completed that substantiates different historic levels of stand initiation structural stages[44] limit disturbance in each LAU as follows: If more than 30 percent of the lynx habitat in an LAU is currently in a stand initiation structural stage that does not yet provide winter snowshoe hare habitat, no additional habitat may be regenerated by vegetation management projects.	LAU di-02 which is adjacent to di-04 to the north is at approximately 5% early stand initiation habitat. Percentages in Alternative 3 are 2% in LAU di-03 and 10% in LAU di-04. Percentages in Alternative 4 are 2% in LAU di-03 and 20% in LAU di-04. There are no treatments in LAU di-05. The percent of early stand initiation habitat in all three LAUs does not exceed 30%. Standard is met. *Note:* Early stand initiation and stand initiation snowshoe hare habitat are based on field validation and stand diagnoses (in project record). Precommercial thinning units in early stand initiation and stand initiation habitat were dropped from Alternative 4, except in areas proposed for whitebark pine release, outside of the WUI to reflect field validation. If Alternatives 2 or 3 are selected, treatments in early stand initiation and stand initiation habitat would be modified to reflect the field validation used to design Alternative 4 outside of the WUI.
<u>Standard VEG S2</u> – Limits on regeneration from timber mgmt. projects Standard VEG S2 applies to all vegetation management[48] projects that regenerate[37] timber, except for fuel treatment[13] projects within the wildland urban interface (WUI)[49] as defined by HFRA, subject to the following limitation: Fuel treatment projects within the WUI[49] that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 may occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). For fuel treatment projects within the WUI[49] see guideline VEG G10. **The Standard:** Timber management projects shall not regenerate[37] more than 15 percent of lynx habitat on NFS lands in an LAU in a ten-year period.	Currently, regeneration harvest in LAU di-03 has occurred on 0.01% of lynx habitat on NFS lands within the past ten years. The Telegraph project would result in the regeneration of 117 acres in this LAU in both Alternative 2 and 4 which increases the percent regenerated in a ten year period to 0.53%. Alternative 3 would result in the regeneration of 86 acres in LAU di-03 for a percent of 0.39%. Currently, regeneration harvest in LAU di-04 has occurred on 0.07% of lynx habitat on NFS lands within the past ten years. The Telegraph project would result in the regeneration of 2,515 acres in this LAU (Alternative 2) which increases the percent regenerated in a ten year period to 13.41%. Alternative 3 regeneration harvest would result in 6.8%; Alternative 4 in 17.74%. There are no project treatments in LAU di-05. Standard is met for all LAUs.
<u>Standard VEG S5</u> – Precommercial thinning limits Standard VEG S5 applies to all precommercial thinning[35] projects, except for fuel treatment[13] projects that use precommercial thinning as a tool within the wildland urban interface (WUI)[49] as defined by HFRA, subject to the following limitation:	There are 65 acres of pre-commercial thinning in early stand initiation habitat and stand initiation habitat in LAU di-03 (Alternative 2 and 4). All acres are within the WUI. There are 34 acres in Alternative 3, all of which are in WUI.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
Fuel treatment projects within the WUI[49] that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 may occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). For fuel treatment projects within the WUI[49] see guideline VEG G10. **The Standard:** Precommercial thinning projects that reduce snowshoe hare habitat, may occur from the stand initiation structural stage[44] until the stands no longer provide winter snowshoe hare habitat only: 1. Within 200 feet of administrative sites, dwellings, or outbuildings; or 2. For research studies[38] or genetic tree tests evaluating genetically improved reforestation stock; or 4. Based on new information that is peer reviewed and accepted by the regional levels of the Forest Service and FWS, where a written determination states: c. that a project is not likely to adversely affect lynx; or d. that a project is likely to have short term adverse effects on lynx or its habitat, but would result in long-term benefits to lynx and its habitat; or 4. For conifer removal in aspen, or daylight thinning[5] around individual aspen trees, where aspen is in decline; or 5. For daylight thinning of planted rust-resistant white pine where 80 % of the winter snowshoe hare habitat[50] is retained; or 6. To restore whitebark pine.	There are 1,262 acres of pre-commercial thinning in early stand initiation habitat and stand initiation habitat in LAU di-04 of which 917 are within the WUI and 345 are outside of the WUI (see note). There are 860 acres of precommercial thinning in early stand initiation and stand initiation habitat in Alternative 3 of which 561 are within the WUI and 299 are outside of the WUI (see note). There are 850 acres of precommercial thinning in Alternative 4 of which 845 are within the WUI. The remaining 5 acres that are outside of the WUI are proposed for whitebark pine release. Standard is met. *Note:* Early stand initiation and stand initiation snowshoe hare habitat are based on field validation and stand diagnoses (in project record). Precommercial thinning units in early stand initiation and stand initiation habitat were dropped from Alternative 4, except in areas proposed for whitebark pine release, outside of the WUI to reflect field validation. If Alternatives 2 or 3 are selected, treatments in early stand initiation and stand initiation habitat would be modified to reflect the field validation used to design Alternative 4 outside of the WUI.
<u>Standard VEG S6</u> – Multi-storied stands & snowshoe hare horizontal cover Standard VEG S6 applies to all vegetation management[48] projects that regenerate[37] timber, except for fuel treatment[13] projects within the wildland urban interface (WUI)[49] as defined by HFRA, subject to the following limitation: Fuel treatment projects within the WUI[49] that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 may occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). For fuel treatment projects within the WUI[49] see guideline VEG G10. **The Standard:** Vegetation management projects that reduce snowshoe hare habitat in multi-story mature or late successional forests[29] may occur only:	There are 40 acres of vegetation treatments in multistory habitat in LAU di-03 in Alternatives 2 and 3. There are 80 acres in Alternative 4. All acres are within the WUI. In Alternative 2, there are 1,594 acres of vegetation treatments in multistory habitat in LAU di-04 of which 1,154 are within the WUI and 440 are outside of the WUI. In Alternative 3, there are 832 acres of vegetation treatments in multistory habitat in LAU di-04 of which 534 are within the WUI and 298 are outside of the WUI. In Alternative 4, there are 1,992 acres of vegetation treatments of which 1,452 acres are within the WUI and 539 acres are outside the WUI.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
1. Within 200 feet of administrative sites, dwellings, outbuildings, recreation sites, and special use permit improvements, including infrastructure within permitted ski area boundaries; or 2. For research studies[38] or genetic tree tests evaluating genetically improved reforestation stock; or 3. For incidental removal during salvage harvest[41] (e.g. removal due to location of skid trails). (NOTE: Timber harvest is allowed in areas that have potential to improve winter snowshoe hare habitat but presently have poorly developed understories that lack dense horizontal cover [e.g. uneven age management systems could be used to create openings where there is little understory so that new forage can grow]).	Field validation in multistory hare habitat outside of the WUI indicated that the multistory hare habitat is actually in scattered clumps within the larger treatment unit, even though the entire unit may be labeled 'multistory hare habitat'. Prior to implementation, these multistory inclusions would be identified and would remain untreated. Standard is met.
Guideline VEG G1 – Lynx habitat improvement Vegetation management[48] projects should be planned to recruit a high density of conifers, hardwoods, and shrubs where such habitat is scarce or not available. Priority should be given to stem-exclusion, closed-canopy structural stage[44] *stands for lynx or their prey (e.g. mesic, monotypic lodgepole stands).* Winter snowshoe hare habitat[50] should be near denning habitat[6].	Treatments are proposed in stem exclusion and mid-seral lynx habitat in order to promote structure diversity and encourage tree growth and understory development.
Guideline VEG G4 – Prescribed Fire Prescribed fire[34] activities should not create permanent travel routes that facilitate snow compaction. Constructing permanent firebreaks on ridges or saddles should be avoided.	The construction of fire breaks on ridges or saddles would be avoided unless needed to achieve prescribed fire goals.
Guideline VEG G5 – Habitat for alternate prey species Habitat for alternate prey species, primarily red squirrel[36], should be provided in each LAU.	Some red squirrel habitat may be affected by proposed treatments; however, ample untreated areas remain in the project area in the action alternatives.
Guideline VEG G10 – Fuel treatments in the WUI *Fuel treatment projects in the WUI[49] as defined by HFRA[17, 48] should be designed considering standards VEG S1, S2, S5, and S6 to promote lynx conservation.*	Overall, the project is designed to be responsive to the mountain pine beetle outbreak in the area, promote desirable regeneration, improve conditions for fire suppression effectiveness as well as firefighter and public safety in the area in the event of a wildfire, and maintain diverse wildlife habitats. These goals are compatible with conservation of lynx habitat. The action alternatives have been designed with VEG S1, S2, S5, and S6 in mind. Furthermore, Alternative 3 has been designed to minimize effects to lynx habitat while still meeting the purpose and need of the project.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
Guideline VEG G11 – Denning habitat *Denning habitat[6] should be distributed in each LAU in the form of pockets of large amounts of large woody debris, either down logs or root wads, or large piles of small wind thrown trees ("jack-strawed" piles). If denning habitat appears to be lacking in the LAU, then projects should be designed to retain some coarse woody debris[4], piles, or residual trees to provide denning habitat[6] in the future.*	Denning habitat is not lacking in the project area. Because of the mountain pine beetle outbreak there are currently about 50 snags per acre on average in the7-11.9" size class and 9 in the 12-19.9" size class in the project area. These snags will eventually fall to the forest floor creating abundant denning habitat. About 29% of the project area would be treated leaving 71% untreated.
LIVESTOCK MANAGEMENT (GRAZ) T*he following objectives and guidelines apply to grazing projects in lynx habitat in lynx analysis units (LAU). They do not apply to linkage areas.*	
Guideline GRAZ G1 – Livestock grazing and openings In fire- and harvest-created openings, livestock grazing should be managed so impacts do not prevent shrubs and trees from regenerating.	Prescribed fire, regeneration, and planting units within grazing allotments would be rested at least one growing season following burning to allow for adequate vegetation recovery.
Guideline GRAZ G2 – Livestock grazing and aspen In aspen stands, livestock grazing should be managed to contribute to the long-term health and sustainability of aspen.	Aspen would be favored in all harvest treatments; if post-treatment monitoring indicates that livestock are impeding the ability of aspen to regenerate, then appropriate measures would be taken to protect aspen regeneration (e.g. fencing).
Guideline GRAZ G3 – Livestock grazing and riparian areas & willow carrs In riparian areas[40] and willow carrs[3], livestock grazing should be managed to contribute to maintaining or achieving a preponderance of mid- or late-seral stages[28], similar to conditions that would have occurred under historic disturbance regimes.	If treatments proposed in the action alternatives result in resource concerns in riparian areas, appropriate measures would be taken to alleviate those concerns.
Guideline GRAZ G4 – Livestock grazing and shrub-steppe habitats In shrub-steppe habitats[42], livestock grazing should be managed in the elevation ranges of forested lynx habitat in LAUs[21], to contribute to maintaining or achieving a preponderance of mid- or late-seral stages, similar to conditions that would have occurred under historic disturbance regimes.	If treatments proposed in the action alternatives result in resource concerns in shrub-steppe habitats, appropriate measures would be taken to alleviate those concerns.
HUMAN USE PROJECTS (HU) The following objectives and guidelines apply to *human use projects, such as special uses (other than grazing), recreation management, roads, highways, mineral and energy development, in lynx habitat in lynx analysis units (LAU),* subject to valid existing rights. *They do not apply to vegetation management projects or grazing projects directly. They do not apply to linkage areas.*	
Guideline HU G1 – Ski area expansion & development, inter-trail islands When developing or expanding ski areas, provisions should be made for adequately sized inter-trail islands that include coarse woody debris[4], so winter	The project does not include ski expansion or development. Standard is not applicable.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
snowshoe hare habitat[49] is maintained.	
Guideline HU G2 – Ski are expansion & development, foraging habitat When developing or expanding ski areas, foraging should be provided consistent with the ski area's operational needs, especially where lynx habitat occurs as narrow bands of coniferous forest across mountain slopes.	The project does not include ski expansion or development. Standard is not applicable.
Guideline HU G3 – Recreation developments Recreation developments and operations should be planned in ways that both provide for lynx movement and maintain the effectiveness of lynx habitat[23].	The project does not include recreation development. Standard is not applicable.
Guideline HU G4 – Mineral & energy development For mineral and energy development sites and facilities, remote monitoring should be encouraged to reduce snow compaction.	The project does not include mineral & energy development. Standard is not applicable.
Guideline HU G5 – Mineral & energy development, habitat restoration For mineral and energy development sites and facilities that are closed, a reclamation plan that restores[39] lynx habitat should be developed.	The project does not include mineral & energy development. Standard is not applicable.
Guideline HU G6 – Roads, upgrading Methods to avoid or reduce effects to lynx should be used in lynx habitat when upgrading unpaved roads to maintenance levels 4 or 5, if the result would be increased traffic speeds and volumes, or a foreseeable contribution to increases in human activity or development.	Some road reconstruction will occur as part of the action alternatives to improve routes used for hauling. This is primarily to reduce resource damage that may occur during hauling (e.g. erosion and sediment delivery to adjacent streams). Maintenance levels would not be upgraded as a result of these road improvements.
Guideline HU G7 – Roads, locations New permanent roads should not be built on ridge-tops and saddles, or in areas identified as important for lynx habitat connectivity[16]. New permanent roads and trails should be situated away from forested stringers.	No new permanent roads would be constructed in the action alternatives. Standard is not applicable.
Guideline HU G8 – Roads, brushing Cutting brush along low-speed[25], low-traffic-volume roads should be done to the minimum level necessary to provide for public safety.	Road maintenance would occur along haul routes, including brushing in some instances, for safety purposes.
Guideline HU G9 – Roads, new On new roads built for projects, public motorized use should be restricted. Effective closures should be provided in road designs. When the project is over, these roads should be reclaimed or decommissioned, if not needed for other management objectives.	Temporary roads that would be built in the action alternatives will be closed to public use. Post-project implementation, these roads will be decommissioned.
Guideline HU G10 – Roads, ski area access	The project does not include ski expansion or development. Standard is not applicable.

Northern Rockies Lynx Management Direction	Consistency with the Action Alternatives
When developing or expanding ski areas and trails, access roads and lift termini to maintain and provide lynx security[10] habitat.	
Guideline HU G11 – Snow compaction Designated over-the-snow routes, or designated play areas, should not expand outside baseline areas of consistent snow compaction[1], unless designation serves to consolidate use and improve lynx habitat. This is calculated on an LAU basis, or on a combination of immediately adjacent LAUs. This does not apply inside permitted ski area boundaries, to winter logging, to rerouting trails for public safety, to accessing private inholdings, or to access regulated by Guideline HU G12. Use the same analysis boundaries for all actions subject to this guideline.	The project does not include ski expansion or development. Standard is not applicable.
Guideline HU G12 – Winter access for non-recreation SUP & mineral & energy development Winter access for non-recreation special uses, and mineral and energy exploration and development, should be limited to designated routes[8] or designated over-the-snow routes[7].	The project does not include non-recreation SUP or mineral/energy development. Standard is not applicable.
LINKAGE AREAS (LINK) The following objective, standard and guidelines apply to *all projects within linkage areas,* subject to valid existing rights.	
Standard LINK S1 – Highway or forest highway construction in linkage areas When highway[18] or forest highway[12] construction or reconstruction is proposed in linkage areas[22], identify potential highway crossings.	The project does not include highway or forest highway construction. The standard is not applicable.
Guideline LINK G1 – Land exchanges NFS lands should be retained in public ownership.	The project does not include land exchanges. The standard is not applicable.
Guideline LINK G2 – Livestock grazing in shrub-steppe habitats *Livestock grazing in shrub-steppe habitats[42] should be managed to contribute to maintaining or achieving a preponderance of mid- or late-seral stages[28], similar to conditions that would have occurred under historic disturbance regimes.*	The project is not an allotment management plan. The standard is not applicable.

Wildife Appendix D – Viability Analysis

The status of wildlife populations, as we currently understand their distribution on the Helena National Forest (HNF), and their habitats are examined in this section in order to address Forest Plan and Agency requirements that: (1) "viable populations of existing native and desirable non-native plant and animal species are maintained" (USDA 1986, p. II/17) and (2) management activities do not cause a trend towards listing for species that have been identified as sensitive on the Region One Sensitive Species List (FSM 2005, 2009).

Summary of Population Viability Status

Forest Service Region One defines a viable species as "consisting of self-sustaining populations that are well distributed throughout the species range." Self-sustaining populations are "sufficiently large, and have sufficient genetic diversity to display the array of life history strategies and forms that will provide for their persistence and adaptability in the planning area over time" (Samson 2006 updated in USDA 2008). The following table summarizes the type of data available for each MIS and for the wolverine, a sensitive species and a proposed species under the ESA. The wolverine is the only sensitive species analyzed in this section since it's the only one analyzed in detail above. Ratings for other sensitive species not included in the following table can be found in the *Biological Evaluation* section.

Table D-D-1. Primary information sources for determining population viability of MIS and sensitive species in the Telegraph project area and the HNF

Indicator/ Sensitive Species	Presence/ Absence Surveys by Protocol	Presence/ Absence Surveys Random	Intermittent Species Observations	Comprehensive Habitat Modeling	R1 Conservation Assessment	Habitat Surveys
Elk	X			X		X
Mule Deer	X			X		X
American Marten				X	X	
Northern Goshawk	X	X	X	X	X	X
Pileated Woodpecker	X	X	X	X	X	X
Hairy Woodpecker	X	X	X	X		X
Wolverine	X	X	X	X		

Viability ratings for elk and mule deer are based on annual tallies of individuals in the field, usually by MFWP. Extensive data on suitable habitat is also available for elk and mule deer, through Forest-wide habitat modeling and systematic field surveys. Ratings for goshawk and hairy woodpecker are based on wide-ranging, but less complete, population surveys in the field. This information is sufficient to indicate the general magnitude and distribution of populations in the project area and throughout the *Forest Plan* area. Availability of suitable habitat has been estimated through Forest-wide habitat models, systematic habitat surveys, or both.

Ratings for wolverine, marten, and pileated woodpecker are more problematic. Population information comes primarily through tallies and mapping of fortuitous and, occasionally, targeted field observations.

This demonstrates that the species continue to inhabit the planning area, if not the project area, and it provides a rough indication of how they are distributed. But it is a crude estimator of viability. On the other hand, Regional and Forest-wide habitat models and general field surveys provide a basis for assessing habitat sufficiency.

Based on discussion in the *Northern Region Viability Protocol* (Samson 1997), a review of the Northern Region *Viability Committee Report* (Samson 1997 Appendix B), and *Habitat Estimates for Maintaining Viable Populations* (Samson 2006 updated in USDA 2006) the following qualitative rating system was applied to MIS populations and habitats as a means of assessing at population viability (Table *Rating System for MIS Populations and Viability*).

Table D-D-2. Rating system for MIS populations and viability

Rating	Population Distribution and Condition within Potential Habitat	Potential for Population Interaction and Colonization of Empty Habitat	Probability of Population Persistence over 50–100 years
5	Population widely distributed, robust, and resilient	Few limitations on population interactions	Very High: Population large, widespread, relatively stable, highly resilient
4	Population well distributed; variable population density	Some barriers to population interaction and habitat occupancy	High: Population widespread, resilient; no insurmountable decimating factors or habitat problems
3	Population may be widely but sporadically distributed; variable density within suitable patches	Barriers to interaction result in some persistently empty habitat blocks	Moderate: Population widely but sporadically distributed; key habitat may be limited or vulnerable; decimating factors a potential problem
2	Population segments localized; small but may be persistent	Population segments often isolated; limited routes for interaction and recolonization of empty habitat	Low: Population small, subject to stochastic effects; long-term availability of key habitat uncertain
1	Population segments localized, small, ephemeral	Population segments highly isolated; little possibility of interaction or recolonization of empty habitat	Very Low: Populations very small, habitat limited and unstable; highly vulnerable to stochastic effects

The ratings in the following table apply to potential habitat for the HNF as a whole. In some cases, the project area contributes to maintaining viability of these populations but is not sufficient in and of itself to encompass or support a self-contained viable population or subpopulation. Given the lack of quantitative data, it is not possible to define a precise timeframe for probability of persistence. But, in general, it is intended to apply to the long term: the probability that the population would persist for 50–100 years within the Helena National Forest *Plan* Area (Samson 1997).

Table D-D-3. MIS and sensitive species potential habitat for the HNF

Indicator/ Sensitive Species	Population Distribution Rating	Population Interaction Rating	Estimated Probability of Population Persistence	Comments
Elk	5	4	5	Elk populations on the HNF are robust. Habitat is ubiquitous. These conclusions follow from detailed annual population monitoring by MFWP and extensive habitat surveys by the Helena NF. Local barriers to elk movement are common, but no substantial blocks of elk habitat are isolated. In spite of local habitat problems, elevated predation in some areas, and persistent hunting pressure in others, long-term viability of elk populations is not a concern.
Mule Deer	5	4	5	Mule deer are widely distributed across the Helena NF and surrounding areas. Habitat is ubiquitous. Local impediments to free movement are common, but no substantial blocks of mule deer habitat are isolated. Mule deer often move easily through and inhabit areas of human settlement. Deer populations have cycled up and down over 10-20 year periods for a variety of reasons, but they have never declined to a point where population viability has been at risk. In spite of local habitat problems, predation, and hunting pressure, long-term viability of mule deer populations is not a concern.
American Marten	3	4	4	Primary marten habitat with mature trees and abundant coarse woody debris is patchy but widely distributed in the project area and across the Helena NF. Habitat is most abundant on the Lincoln RD. It is increasing as forests age in areas not affected by mountain pine beetle (mature Douglas-fir, subalpine fir, Engelmann spruce forest). Primary habitat is interconnected by forested travel habitat. Impact of the beetle outbreak is uncertain, as it subtracts mature forest canopy but increases coarse woody debris. Marten are widely distributed, but numbers are unknown. Prospects for long-term viability are good, as long as trapping pressure does not substantially exceed present levels.
Northern Goshawk	4	4	4	Mountain pine beetle is reducing habitat—particularly nesting sites—over extensive areas across the Helena NF. Field surveys indicate that goshawks remain widespread; though nesting success may have decreased.

Indicator/ Sensitive Species	Population Distribution Rating	Population Interaction Rating	Estimated Probability of Population Persistence	Comments
				Goshawks are capable of nesting in a variety of mature forest configurations and are adapting to changing forest conditions. Enough suitable nesting habitat will remain to support viable populations; but reduction and fragmentation of habitat may lower population in the mid-term. As mature forest habitats regenerate, goshawk populations will return to previous levels.
Pileated Woodpecker	2	2	2	Pileated woodpeckers are uncommon but present in the project area. Field observation suggests that they have increased with the pine beetle infestation. The presence of large nesting/roosting trees is the key to their persistence. This habitat component while not overly abundant is common enough across the Forest to ensure the long term viability of pileated woodpeckers.
Hairy Woodpecker	5	4	5	Hairy woodpeckers are common and well distributed in all forest habitats with insect-supporting trees and cavity potential on the Helena NF. Populations have increased with the pine beetle outbreak. Potential for suitable habitat persistence and woodpecker population viability over the long term is excellent.
Wolverine	3	4	4	The wolverine population on the Helena NF is small but persistent, with the animals ranging through a wide variety of habitats in all 4 Forest landscapes. A small number of wolverines have been documented in the Divide landscape over the past few years. Habitat changes wrought by mountain pine beetles, fire, and forest management are unlikely to suppress the ability of wolverines to persist across the Forest. Travel planning over 2 decades has increased the acreage of non-motorized habitat available to wolverines. Primary limiting factors are trapping mortality and loss of high elevation, snowbound denning habitat due to global warming. At present, such factors on the Helena NF are insufficient to threaten the region-wide viability of wolverines.

Samson (2005; 2006 updated in USDA 2008) in *A Conservation Assessment of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region* and *USDA Forest Service Habitat Estimates For Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher* (Samson 2005; Samson 2006 updated in USDA 2008) summarizes the status of viability for northern goshawks, pileated woodpeckers, and American martens. Pileated woodpeckers, flammulated owls, and fishers are not analyzed in detail for this project.

- The species considered in this analysis are 'secure' or 'apparently secure' in terms of persistence (NatureServe 2011).
- Below (and not above) a threshold of 20–30% of habitat amounts, effects of fragmentation (i.e., patch size and isolation) are suggested to have a negative impact on species persistence. Effects of habitat fragmentation on birds are described to be less in the western United States in comparison to those reported in seminal and numerous studies in the Midwest and east.
- No indication exists that forested ecosystems in the Northern Region have reached the 20–30% threshold of historic. Forested systems in the Northern Region are more extensive than in historic (approximately 1800) times (Hessburg and Agee 2003; Hessburg *et al*. 2004).
- Comparison of habitat required for a species-specific minimum viable population to that available indicates well-distributed habitat in far excess to that needed, given the natural distribution of species and their habitats as mapped by the Montana Natural Heritage Program, Idaho Birdnet, and the scientific literature.
- Region-wide habitat modeling for the American marten is restricted by the unavailability of sample-based information on large down woody debris and the variability evident in habitat use by martens. Site-specific models for the American marten may need to be adjusted to include resting site and nest site information (based on point observation data) which may or may not influence habitat amount estimates.

Habitat Analysis and Conclusions

Samson (2006 updated USDA 2008) identifies critical thresholds needed to maintain populations for selected species within the Northern Region of the Forest Service (Table D-4 [D-D-4]*).* Samson, in his *Habitat Estimates for Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher* (Samson 2006) articulates a process for calculating habitat thresholds necessary to maintain viable populations in Region One of the Forest Service. In his *Conservation Assessment of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region, USDA Forest Service,* Samson (2005), defines a 'population' which serves as the basis for establishing critical thresholds.

Estimates derived from the Helena National Forest Intensified Grid Summary Database (June 2013) indicate that habitat for these selected species exceeds the critical thresholds identified by Samson. The models used to generate estimates are based on Samson (2005, 2006 updated in USDA 2008) and USDA (2009)..

Table D-D-4. Summary[1] of critical habitat thresholds (acres) to maintain minimum viable populations for three species in Northern Region compared with existing conditions on the HNF (based on intensified grid data)

Species	Critical Thresholds for the HNF Samson (2006 updated in USDA 2008)	Current Habitat Estimates (Acres) for the HNF based on Intensified Grid Data[2]	90% Confidence Interval Acres
Northern Goshawk	133,436 (nesting and foraging)	362,645 (nesting and foraging)	334,750 – 390,541
Pileated Woodpecker (nesting and foraging)	91,923	195,271 (nesting and foraging)	167.375 – 213,868
American Marten	3,459	288,257	260,361 – 306,854

[1] Current habitat estimates are based on the HNF Summary Database (Accessed April, 2016).

2 Estimates are derived by multiplying the percentage of forested data points identified as a given species habitat by the total forested acres on the Helena National Forest (approximately 929,860 acres according to updated ownership and grid data). Subplots that experience fire or harvest are removed from estimates.

This table gives a sense of the factors important to maintaining viability some of the MIS in the project area that are particularly vulnerable to habitat loss. At present, the primary factor influencing the viability and quality of habitat for these species is the mountain pine beetle outbreak, which has killed lodgepole and ponderosa pine trees over hundreds of thousands of acres on the Forest. Long-term population viability for these species will be determined by their ability to adapt to the new habitat configurations and to maintain a persistent, if somewhat modest presence, in Helena NF landscapes until forests recover their former structure.

Forest-wide habitat continues to remain above critical thresholds for the three species identified in Table D-4 even considering habitat removal associated with the action alternatives. Acres of habitat treated for these species would not result in a breach of the critical thresholds. Therefore, viability for these species appears sound and would remain so upon implementation of proposed treatments regardless of alternative selected.

Viability for wolverine, elk and mule deer, and hairy woodpeckers also appears sound although critical thresholds have not been identified. Elk and mule deer habitat is abundant and well-distributed across the Forest and viability is largely determined through hunting quotas, which are outside the scope of this project. Except for some specific denning-related requirements, wolverines are opportunists and habitat generalists, and are little affected by beetle generated changes. Changes under the action alternatives with the greatest potential to impact wolverines are associated with the human disturbance of project activities. However, this would not be substantial enough to influence population viability.

Hairy woodpeckers inhabit a wide variety of environments with dead, dying, or other insect prone trees. Given the widespread availability of foraging and nesting substrate generated by the mountain pine beetle outbreak, habitat for hairy woodpeckers will be overly abundant across the Forest for several years.

Wildlife Appendix D References

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Appendix E – Wildlife Cumulative Effects Analysis

The cumulative effects analysis is based on a review of those projects/activities included in the *Telegraph Cumulative Effects Analysis Tables*. For each species/habitat for which the Telegraph Project may impact, the historic, past (1987-2015), present, and reasonably foreseeable future projects are evaluated for their cumulative effect on wildlife and their habitats.

Cumulative Effects and the Environmental Baseline

The environmental baseline for the wildlife and habitats analyzed in the Specialist Report is a result of the past activities that may have resulted in changes to those habitats. The effects of those past projects in the cumulative effects tables that resulted in the modification of habitat are reflected in the environmental baseline. Specifically, and for example, if vegetation management has occurred in the past, then those changes on the landscape as a result of management are reflected in current acreages for a given species' habitat. Their changes are also described in the respective cumulative effects analysis.

Cumulative Effects Analysis Areas

The cumulative effects analysis area is based on the habitat or species of interest and includes:

- Project area
- Elk herd units
- Lynx analysis units
- Combined boundary
- Divide Landscape

Synopsis of Cumulative Effects Relevant to Wildlife

Summary of Historic Effects

Humans have had an influence on wildlife and their habitat prior to the arrival of the first eastern explorers and settlers. Local Native Americans influenced wildlife through hunting and trapping, setting fires, establishing seasonal encampments, and grazing horses, as well as a variety of other activities. Aside from setting fires, most of these activities were localized or of low intensity such that widespread impacts on wildlife and their habitats were not present. With the arrival of Euro-Americans, major changes occurred to wildlife and their habitats. Beaver were nearly extirpated, riparian areas were dwindling, and mining, particularly on the Helena National Forest, exerted major landscape influences. Primary historic influences on wildlife and their habitats include the following and the extent to which these influence and shape wildlife habitats is reflected in the environmental baseline:

- Road building and maintenance some of which has modified streams, reduced terrestrial habitat, and reduced habitat effectiveness by facilitating human access
- Domestic livestock grazing on public and private lands
- Timber harvest
- Fire suppression that has resulted in shifts in stand structure and composition
- Trapping and hunting, which has reduced populations of several species in the Divide Landscape (e.g., wolves, grizzly bears)
- Widespread recreation including dispersed and developed recreation that result in varying degrees of disturbance to wildlife and their habitats
- Dispersed settlement on Forest inholdings
- Wildfire

Summary of Past Effects (1987-2015), Ongoing Effects, and Reasonable Foreseeable Effects

Past, ongoing, and reasonably foreseeable activities within the project area (Figure E-1 [D-E-1]) and combined boundary (Figure E-2 [D-E-2]) that continue to influence wildlife include timber management, mineral exploration, grazing management, special use permits, and fuels management, among others. A majority of past regeneration harvest occurred prior to the 1990s while fuels treatments spiked in the 1980s.

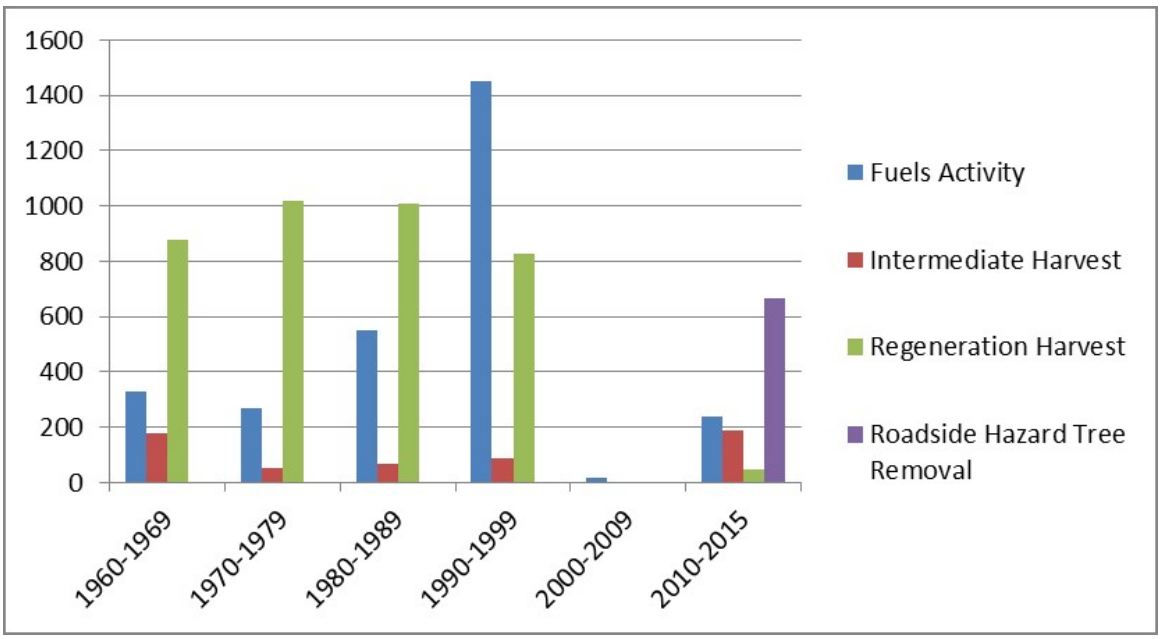


Figure D-E-1. Acres treated within the project area by fuels management or timber harvest from pre-1960s through 2015

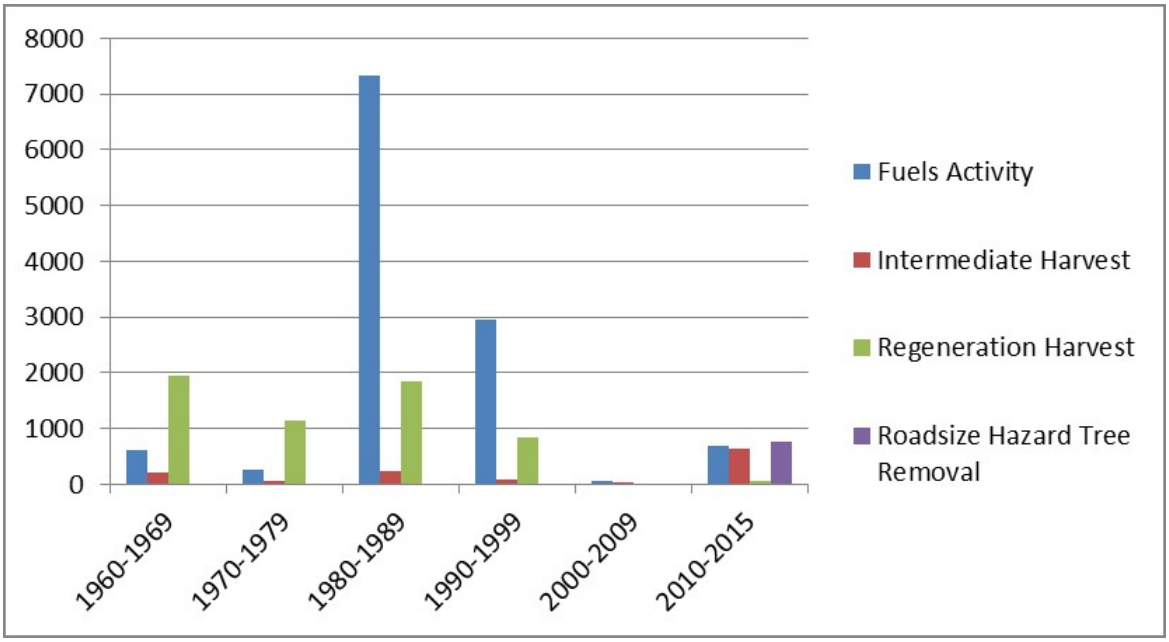


Figure D-E-2. Acres treated within the combined boundary by fuels management or timber harvest from pre-1960s through 2015

Implications of Proposed Action for Cumulative Effects

Contributions of the project to cumulative effects are identified in the following tables. Table E-1 [D-E-1] summarizes the effects of past vegetative and fuel activities on the composition of the existing vegetation in the project area and combined boundary and the contributions of the alternatives to that condition. Table E-2 [D-E-2] summarizes the contributions of the alternatives to past activities that are not related to changes in vegetation. Table E-3 [D-E-3] summarizes the ongoing activities and Table E-4 [D-E-4] summarizes reasonably foreseeable activities. These tables focus on the changes in vegetation and physical parameters (i.e., roads) and how the action alternatives may contribute to these parameters.

Table D-E-1. Past vegetation and fuels activities/projects

Decade/ Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Past Activity	Contribution of Project to Cumulative Effects
Forest Service Timber Harvest				
Pre 1960	Regen: 25 acres Inter: 0 acres	Regen: 25 acres Inter: 0 acres	Stands in which regeneration harvest activity occurred from the 1960s through the 1970s currently comprise pole sized trees (5-10" dbh). Stands of intermediate harvest treatments include larger trees and more open-grown conditions and developing understories. The past regeneration harvest treatments (610 acres in the Jericho EHU and 2,469 in the Spotted Dog – Little Blackfoot EHU) currently provide hiding cover for mule deer and elk but it is unlikely that these areas are thermal cover today. The areas of intermediate harvest (16 acres in the Jericho EHU and 248 in the Spotted Dog- Little Blackfoot EHU), while there would be hiding cover characteristics in some areas, mainly contribute to thermal cover and foraging habitat today except in those areas where MPB associated mortality has resulted in a loss of canopy cover. Many of the roads that were built to facilitate timber harvest remain today and are reflected in the open road densities in the existing conditions. Forage habitat for moose and mule deer proliferated in the 5-15 years post regeneration harvest; most of this habitat has been outcompeted by conifer development. Habitat for species that depend on large tree structure and at least 30% canopy cover is available today in those areas for which intermediate harvest was implemented. These areas are generally composed of larger trees with developing understories that are beneficial to fisher, flammulated owls, goshawks, pileated and hairy woodpeckers, and martens. Regeneration harvest treatments currently provide foraging habitat for goshawks and roosting thickets for flammulated owls. For most other species, these areas	Timber harvest activities that occurred from pre-1960 through the 1970s are reflected in the environmental baseline through R1-VMAP and FIA/Intensified Grid Data that reflect the current vegetation condition in the project area. Alternative 1 will not directly add to the past harvest activities. The ongoing mountain pine beetle outbreak will result in more regenerating stands. Snags would not be removed nor would aspen stands be enhanced. Alternatives 2 would result in 3,484 acres of regeneration harvest and 434 acres of intermediate harvest. The intermediate treatments would add to the amount of open stand structure and enhance growth and vigor in treated stands. Regeneration harvest would result in the creation of early successional stages that are no longer apparent on the landscape as a result of past timber harvest during this time period. Snags will be removed during timber harvest and created during prescribed fire. Whitebark pine, where present, and aspen will be emphasized adding to the past cumulative effects that maintained or created these conditions. Alternative 3 would result in 1,856 acres of regeneration harvest and 434 acres of intermediate harvest. Results are the same as described above. Alternative 4 would result in 4,671 acres of regeneration harvest and 360 acres of intermediate harvest. Results are the same as described above. All Alternatives would result in road decommissioning of temporary roads: Alt 2 results in 8.5 miles of
1960 - 1969	Regen: 880 acres Inter: 180 acres	Regen: 1,936 acres Inter: 214 acres		
1970 – 1979	Regen: 1,019 acres Inter: 50 acres	Regen: 1,143acres Inter: 50 acres		

Decade/ Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Past Activity	Contribution of Project to Cumulative Effects
			have not yet developed structural characteristics to meet minimum habitat requirements. However, in areas where shelterwood treatments were utilized, habitat characteristics have sufficiently developed to provide habitat for species associated with forests that are greater than 30% canopy cover. Past harvest during this time period most likely resulted in snag reduction. Aspen would not have been cut but may have benefitted where competing conifers were removed. Ponderosa pine and other dry open forest types most likely were cut and/or may have also benefitted from timber harvest that created open stand conditions. Whitebark pine most likely was not impacted as it was not considered a merchantable species. Past regeneration harvest in lynx analysis units (1,458 acres in di-03, 1,621 in di-04, and 133 in di-05) and intermediate harvest (212 acres in di-03, 51 in di-04, and none in di-05) during this time period is likely in the stem exclusion stage in lodgepole pine dominated stands where treatment overlaps lynx habitat.	decommissioning and Alts 3 and 4 in 3.4 miles. An additional 32.8 miles of roads would be decommissioned in Alternatives 3 and 4. The decommissioning would reduce the impacts associated with past road construction.

Decade/ Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Past Activity	Contribution of Project to Cumulative Effects
1980 - 1989	Regen: 1,007 acres Inter: 65 acres	Regen: 1,845 acres Inter: 229 acres	Stands in which regeneration harvest activity occurred from the 1980s through the 1990s currently comprise young sapling sized trees (up to 5" dbh). Stands of intermediate harvest treatments include larger trees and more open grown conditions; however, the understories aren't as developed as those stands treated in earlier decades. The past regeneration harvest treatments (640 acres in the Jericho EHU and 2,044 in the Spotted Dog – Little Blackfoot EHU) most likely do not provide hiding cover in those stands treated in the 1990s; stands treated in the 1980s have developed sufficiently to screen elk and provide hiding cover capabilities. These regenerated areas currently do not provide thermal cover except in a few stands where shelterwood treatments were implemented. The areas of intermediate harvest (20 acres in the Jericho EHU and 296 in the Spotted Dog – Little Blackfoot EHU) may provide hiding cover characteristics in those stands that are generally more productive (i.e. cool, moist types); in the drier types stands have not developed to the extent that hiding cover characteristics are provided. Thermal cover has not yet developed in these stands. Many of the roads that were built to facilitate timber harvest remain today and are reflected in the open road densities in the existing conditions. Forage habitat for moose and mule deer proliferated in the 5-15 years post regeneration harvest; this habitat is most likely decreasing as conifers expand. Habitat for species that depend on large tree structure and at least 30% canopy cover is available today in those areas for which shelterwood, patch cut, or single tree selection regeneration harvest techniques were implemented. In areas of intermediate harvest, canopy cover and tree size have not yet developed mature forest	Timber harvest activities that occurred from the 1980s through the 1990s are reflected in the environmental baseline through R1-VMAP and FIA/Intensified Grid Data that reflect the current vegetation condition in the Project area. Alternative 1 would contribute to the effects of past timber because forested stands that are killed by mountain pine beetles would revert to early seral stages similar to those early seral stands that were created as a result of regeneration harvest from the 1980s through today. There would be no additional areas of mature, open grown forests and the ongoing mountain pine beetle outbreak will result in more regenerating stands. Snags would not be removed nor would aspen stands be enhanced. Alternative 2 would result in 3,484 acres of regeneration harvest and 434 acres of intermediate harvest. The intermediate treatments would add to the amount of open stand structure and enhance growth and vigor in treated stands. Regeneration harvest would contribute to the early successional stands that were created during the 1980's and 1990s as a result of regeneration harvest. Snags will be removed during timber harvest and created during prescribed fire. Whitebark pine and aspen will be emphasized adding to the past cumulative effects that maintained or created these conditions. Alternative 3 would result in 1,856 acres of regeneration harvest and 434 acres of intermediate harvest. Results are the same as described above. Alternative 4 would result in 4,671 acres of regeneration harvest and 360 acres of intermediate harvest. Results are the same as described above. All Alternatives would result in road decommissioning of temporary roads: Alt 2 results in 8.5 miles of
1990 – 1999	Regen: 825 acres Inter: 87 acres	Regen: 839 acres Inter: 87 acres		

Decade/ Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Past Activity	Contribution of Project to Cumulative Effects
			structural characteristics since most of these treatments were liberation harvest. Past harvest during this time period most likely resulted in snag reduction. Aspen would not have been cut but may have benefitted where competing conifers were removed. Ponderosa pine and other dry open forest types most likely were cut and/or may have also benefitted from timber harvest that created open stand conditions. Whitebark pine most likely was not impacted as it was not considered a merchantable species. Past regeneration harvest in lynx analysis units (896 in di-03, 1,779 in di-04, and 339 in di-05) and intermediate harvest (215 in di-03, 101 in di-04, and 24 in di-05) during this time period is likely in the early stand initiation stage or the stand initiation stage, winter snowshoe hare habitat where treatment overlaps with lynx habitat.	decommissioning and Alts 3 and 4 in 3.4 miles. An additional 32.8 miles of roads would be decommissioned in Alternatives 3 and 4. The decommissioning would reduce the impacts associated with past road construction.
2000-2009 (does not include the *Forestwide Hazardous Tree Removal and Fuels Reduction Project*)	Regen: 0 acres Inter: 0 acres	Regen: 0 acres Inter: 35 acres	Stands in which regeneration harvest activity occurred from 2000 to 2015 are currently in the stand initiation phase with some large remnant trees remaining. Stands of intermediate harvest treatments include larger trees and more open grown conditions; however, the understories are not yet developed. The past regeneration harvest treatments (43 acres in the Jericho EHU and 16 in the Spotted Dog – Little Blackfoot EHU) most likely do not provide hiding cover in those stands treated in the 1990s; stands treated in the	Timber harvest activities that occurred from in the 2000s are reflected in the environmental baseline through R1-VMAP and FIA/Intensified Grid Data that reflect the current vegetation condition in the Project area. Alternative 1 would contribute to the effects of past timber because forested stands that are killed by mountain pine beetles would revert to early seral stages similar to those early seral stands that were created as a result of regeneration harvest from 2000 through today. There would be no additional areas of mature, open

Decade/ Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Past Activity	Contribution of Project to Cumulative Effects
2010-2015 (does not include the *Forestwide Hazardous Tree Removal and Fuels Reduction Project*)	Regen: 48 acres Inter: 188 acres	Regen: 59 acres Inter: 634 acres	1980s have developed sufficiently to screen elk and provide hiding cover capabilities. These regenerated areas currently do not provide thermal cover except in a few stands where shelterwood treatments were implemented. The areas of intermediate harvest (150 acres in the Jericho EHU and 518 in the Spotted Dog – Little Blackfoot EHU) may provide hiding cover characteristics in those stands that are generally more productive (i.e. cool, moist types); in the drier types stands have not developed to the extent that hiding cover characteristics are provided. In most cases, habitat is not present for those species that depend on canopy closure greater than 30% except in those areas of regeneration harvest where large trees were left as either seed trees or as a shelterwood. Forage habitat for moose and mule deer has proliferated in the past 15 years especially in areas of regeneration harvest. Past regeneration harvest in lynx analysis units (16 in di-03, 32 in di-04, and 248 in di-05) and intermediate harvest (421 in di-03, 188 in di-04, and 602 in di-05) during this time period is likely in the early stand initiation stage where harvest overlaps lynx habitat. Past harvest during this time period most likely resulted in snag reduction. Aspen would not have been cut but may have benefitted where competing conifers were removed. Ponderosa pine and other dry open forest types most likely were cut and/or may have also benefitted from timber harvest that created open stand conditions. Whitebark pine most likely was not impacted as it was not considered a merchantable species.	grown forests and the ongoing mountain pine beetle outbreak will result in more regenerating stands. Snags would not be removed nor would aspen stands be enhanced. Alternative 2 would result in 3,484 acres of regeneration harvest and 434 acres of intermediate harvest. The intermediate treatments would add to the amount of open stand structure and enhance growth and vigor in treated stands. Regeneration harvest would contribute to the early successional stands that were created during the 2000s as a result of regeneration harvest. Snags will be removed during timber harvest and created during prescribed fire. Whitebark pine and aspen will be emphasized adding to the past cumulative effects that maintained or created these conditions. Alternative 3 would result in 1,856 acres of regeneration harvest and 434acres of intermediate harvest. Results are the same as described above. Alternative 4 would result in 4,671 acres of regeneration harvest and 360 acres of intermediate harvest. Results are the same as described above. Alternative 2 would result in the removal of 2,254 acres of hiding cover in the Jericho herd unit and 3,629 acres in the Spotted Dog – Little Blackfoot herd unit. Alternative 3 would result in the removal of 1,307 acres of hiding cover in the Jericho herd unit and 2,218 acres in the Spotted Dog – Little Blackfoot herd unit. Alternative 4 would result in the treatment of 2,693 acres of hiding cover in the Jericho EHU of which 2,240 acres would be removed (precommercial thinning in Alternative 4 is designed to retain hiding cover by limiting spacing of trees to 10-12 feet). Hiding cover would be treated on 4,097 within the Spotted Dog – Little Blackfoot herd unit of which 3,513 acres would be removed. All the action alternatives would be additive in terms of cumulative

Decade/ Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Past Activity	Contribution of Project to Cumulative Effects
				effects relative to the *Forestwide Hazardous Tree Removal and Fuels Reduction Project*. Alternative 2 would result in the treatment of 212 acres of lynx habitat in LAU di-03 and 4,645 acres of lynx habitat in LAU di-04. Alternative 3 would result in the treatment of 150 acres of lynx habitat in LAU di-03 and 2,592 acres in di-04. Alternative 4 would result in the treatment of 277 acres of lynx habitat in LAU di-03 and 5,124 acres in LAU di-04. The early stand initiation, stand initiation, and multistory habitat outside of the WUI in Alternatives 2 and 3 would be dropped from treatment if these alternatives are selected. In other words, these alternatives are not adjusted for field validation. Alternative 4 reflects the removal of treatment units in those habitats outside of the WUI based on field validation. These impacts will add cumulatively to those effects associated with the *Forestwide Hazardous Tree Removal and Fuels Reduction Project* primarily through the creation of early stand initiation habitat. All Alternatives would result in road decommissioning of temporary roads: Alt 2 results in 8.5 miles of decommissioning and Alts 3 and 4 in 3.4 miles. An additional 32.8 miles of roads would be decommissioned in Alternatives 3 and 4. The decommissioning would reduce the impacts associated with past road construction.

Decade/ Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Past Activity	Contribution of Project to Cumulative Effects
Forestwide Hazardous Tree Removal and Fuels Reduction Project				
2010-2015	665 acres	772 acres	The Roadside Hazard Tree Project primarily removed dead trees – snags – along roadsides; however, Forest Plan standards for snags are being met. The project "may impact individuals but won't cause a trend towards listing" for black-backed woodpeckers. Connectivity is affected by the removal of roadside screening; however, forested habitat exists away from treatment areas that will continue to provide wildlife corridors. Approximately 350 and 563 acres of hiding cover were treated in the Jericho and Spotted Dog – Little Blackfoot elk herd units, respectively and 11 acres of thermal cover on winter range were treated in the Jericho elk herd unit (Source -*Forestwide Hazard Tree Removal and Fuels Reduction Project Helena National Forest Townsend, Helena, and Lincoln Ranger Districts Wildlife Background Report and Biological Evaluation*). A Forest Plan site-specific amendment was prepared for this project. However, the analysis for this project concluded that "it is unlikely therefore that the small amount of elk habitat that will be removed under the Proposed Action would alter elk population numbers". The Roadside Hazard Tree Project affected lynx habitat as follows: 7, 46, and 35 acres of multistory hare habitat were removed in di-03, di-04, and di-05 respectively; 1 acre each of early stand initiation and/or stand initiation hare habitat were removed in di-03 and di-04, respectively (Source -*Forestwide Hazard Tree Removal and Fuels Reduction Project Helena National Forest Townsend, Helena, and Lincoln Ranger Districts Wildlife Background Report and Biological Evaluation*).	Alternative 1 would contribute to the effects of past timber because forested stands that are killed by mountain pine beetles would revert to early seral stages similar to those early seral stands that were created as a result of regeneration harvest from the 1980s through today. Alternative 2 would result in the removal of 2,254 acres of hiding cover in the Jericho herd unit and 3,629 acres in the Spotted Dog – Little Blackfoot herd unit. Alternative 3 would result in the removal of 1,307 acres of hiding cover in the Jericho herd unit and 2,218 acres in the Spotted Dog – Little Blackfoot herd unit. Alternative 4 would result in the treatment of 2,693 acres of hiding cover in the Jericho EHU of which 2,240 acres would be removed (precommercial thinning in Alternative 4 is designed to retain hiding cover by limiting spacing of trees to 10-12 feet). Hiding cover would be treated on 4,097 within the Spotted Dog – Little Blackfoot herd unit of which 3,513 acres would be removed. All the action alternatives would be additive in terms of cumulative effects relative to the *Forestwide Hazardous Tree Removal and Fuels Reduction Project*. Alternative 2 would result in the treatment of 212 acres of lynx habitat in LAU di-03 and 4,645 acres of lynx habitat in LAU di-04. Alternative 3 would result in the treatment of 150 acres of lynx habitat in LAU di-03 and 2,592 acres in di-04. Alternative 4 would result in the treatment of 277 acres of lynx habitat in LAU di-03 and 5,124 acres in LAU di-04. The early stand initiation, stand initiation, and multistory habitat outside of the WUI in Alternatives 2 and 3 would be dropped from treatment if these alternatives are selected. In other words, these alternatives are not adjusted for field validation. Alternative 4 reflects the removal of treatment units in

Decade/ Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Past Activity	Contribution of Project to Cumulative Effects
			Habitat for several species has been altered by this project through the removal of dead and dying trees and the subsequent reduction in dead wood habitat.	those habitats outside of the WUI based on field validation. These impacts will add cumulatively to those effects associated with the *Forestwide Hazardous Tree Removal and Fuels Reduction Project* primarily through the creation of early stand initiation habitat. All action alternatives will result in the removal of some snags with potential impacts to woodpeckers adding to the effects of the *Forestwide Hazardous Tree Removal and Fuels Reduction Project*. However, Forest Plan standards will be met for snags.
Fuels Activities – Total acres are reported here; however, not all prescribed fire changes the composition of the vegetation.				
Pre-1960	0 acres	0 acres	Fuel activities that occurred during the 1960s and 1970s reduced surface fuels and created more open forest conditions. Many of these areas that have been treated have returned to 'pre-treatment' conditions especially In favorable growing conditions that accelerate understory development. Generally, fuel treatments of this period improved shrub understories and aspen development as well as creating additional snags. In some situations, down woody debris may have been consumed and structural diversity reduced.	Fuels activities that occurred from the pre-1960s through 2011 are reflected in the environmental baseline through R1-VMAP and FIA/Intensified Grid Data that reflect the current vegetation condition in the Project area. Fuel treatments from 2011 to 2015 most likely comprise a mosaic of vegetative age classes and species, depending on the type of fuel treatment (e.g. jackpot burn, low severity, or mixed severity). Alternative 1 would not add to the amount of open conditions and would perpetuate understory development and surface fuel accumulations. Snags would not be removed under this Alternative. Shrub, grassland, and aspen communities would not be enhanced either. Alternatives 2, 3, and 4 would result in the prescribed burning of 1,050, 606, and 1,013 acres respectively, creating additional open areas and in the short term affecting understory development and surface fuels accumulations. Treatments would add to landscape heterogeneity and resiliency of stands and contribute to the amount of snags in the project area which are already plentiful. Treatments would also promote aspen,
1960-1969	329 acres	606 acres		
1970-1979	268 acres	268 acres		
1980-1989	552 acres	7,338 acres	Fuel activities that occurred during the 1980s and 1990s have also reduced surface fuels and created more open forest conditions. Some of these areas that have been treated have returned to 'pre-treatment' conditions. Fuel activities have promoted shrub and aspen communities.	
1990-1999	1,453 acres	2.966 acres		
2000 to 2009	19 acres	71 acres	Fuel activities that occurred from 2000 to present have generally resulted in improved grass and shrublands as well as in the creation of snags. However, these areas are generally more open than areas of past fuel treatments.	
2010 to 2015	236 acres	692 acres		

Decade/ Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Past Activity	Contribution of Project to Cumulative Effects
				whitebark pine, and shrub and grassland communities adding to some of the past effects on these habitats.
Private land timber harvest				
2005-2015	98 acres	1,948 acres	Regeneration harvest that occurred during this time period has resulted in early successional habitat with some large trees remaining. Timber harvest on private land most likely did not result in any snag retention.	Alternative 1 would contribute to the effects of past timber because forested stands that are killed by mountain pine beetles would revert to early seral stages similar to those early seral stands that were created as a result of regeneration harvest from the 1980s through today. The action Alternatives would add to the amount of open stands created by intermediate harvest on private land and would add to the early successional habitat created by regeneration harvest. Snag reduction associated with all action Alternatives would add cumulatively to snag reduction associated with private timber harvest.

Table D-E-2. Additional past activities/projects (not vegetation or fuel related)

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
Banner Creek Bridge #1	2014		Deck and curb replacement.	There are no measurable effects to wildlife.	There are no anticipated cumulative effects.
EPA-Little Lilly/Lee Mountain Complex removal and reclamation	2013		Mine waste removal and reclamation. Also installed groundwater monitoring wells to evaluate arsenic levels pre and post removal.	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Sally Anne Road	2010-2011		Aquatic Organism Passage Legacy Road: Road 527 replace undersized Sally Anne culvert with a 12’ span by 4’ rise by 40’ long three sided concrete box culvert.	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. The project also should have improved riparian conditions.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
National Guard High Elevation Helicopter Landing Training	2010	MT National Guard requested to conduct helicopter pilot training at various peaks on the Helena National Forest as well as water bucket training. Red Mtn., Treasure Mtn., Negro Mtn., Hog Back, and Lava Mtn.		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
MT Army National Guard	2010		Permit for winter survival training on MacDonald Pass.	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
					wildlife which would add to the displacement effects associated with this past project.
Tree Farmer Road	2010		Resource Advisory Council: Phase I Road 314 reconstruct 2.4 miles; 4" new surface aggregate for 1.8 miles; construct 2 drain dips; install 2 new 18" culverts Phase II Road 314 reconstruct road for 1 mi.; new surface aggregate for 1.2 miles; construct 2 drain dips	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Minnehaha Road	2010	Legacy Road: Road 527 recondition 4.9 miles, construct 3 drain dips; 4" new surface aggregate on 1.15 miles; install 36 new 18" culverts; replace 2 undersized culverts w/ lager culvert		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Hahn Creek Roads	2010	American Restoration & Recovery Act: Road 495 replace undersized Hahn Creek culvert w/ a 123" span by 83" rise by 40' corrugate steel pipe arch. Road 1856 replace undersized culvert w/ a 123" span by 83" rise by 40'		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
		corrugate steel pipe arch			
Telegraph Creek Roads	2009-2010	American Restoration & Recovery Act: Road 495 reconstruct 4.1 miles; 4" new surface aggregate for 4.1 miles; dust palliative 1.4 miles; install 24 new 18" culverts; replace 5 undersized culverts w/ larger culverts Road 1856 install 7 new culverts; replace 4 undersized culverts w/ larger culverts Road 1857 install 7 new culverts		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. Also, the location along an open road system dilutes its impact for most species.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Little Blackfoot Roads	2010	American Restoration & Recovery Act: Road 227 recondition 6 miles; 4" new surface aggregate for 6 miles; dust palliative 6 miles; install 8 new 18" culverts; install 1 new 24" culvert; raise roadbed 2' for 200' just south of Hat Creek to protect roadway during spring runoff		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. Also, the location along an open road system dilutes its impact for most species.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Thomas Brothers Lumber	December 2009	Hat Creek & Little Blackfoot – Commercial Road Use Permit		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. Also, the location along an open road system dilutes its impact for most species.
U.S. Hwy 12 Improvements	October 2009		Removal of vegetation (4 to 5 log truck loads), installation of guard rails, erosion protection, and sanding/salting.	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. Also, the location along an open road system dilutes its impact for most species.	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. Also, the location along an open road system dilutes its impact for most species.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
Continental Divide Trailhead (CDNST)	July 2009	Construction of approximately seven miles of new CDNST to reroute the trail to the Continental Divide. This new segment connects to the Bison Creek Area where the CDNST trail leads onto the neighboring Beaverhead-Deerlodge National Forest.		New trail construction on the Helena NF (1) substitutes new foot trail for routes that formerly followed roads (open and closed) or (2) moves existing trail out of problematic locations (stream bottoms, wet meadows, etc.). Given the relatively low-key use, effects are usually beneficial or neutral for wildlife except during project implementation.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
North Pasture Division Fence	March 2006	Installation of this fence enabled the permittee to get better cattle distribution in the eastern portion of the pasture that did not receive very much use until this fence was installed. In addition, it helped keep cattle off the Frog Pond areas as well as off Elliston Creek. It also shortened the season of use for two parts of the pasture		Redistribution of cattle should benefit wildlife species especially in riparian areas.	There are no anticipated cumulative effects.
Continental Divide Trailhead & Connector Trail	August 2005		Construction of trailhead and approximately ½ mile of new road to access the trailhead and approximately ½ mile of connector trail to tie in	New trail construction on the Helena NF (1) substitutes new foot trail for routes that formerly followed roads (open and closed) or (2) moves existing trail out of problematic locations (stream	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
			with the existing Continental Divide National Scenic Trail	bottoms, wet meadows, etc.). Given the relatively low-key use, effects are usually beneficial or neutral for wildlife except during project implementation.	displacement effects associated with this past project.
North Western Corporation Moose Creek Utility Extension	February 2004		This decision authorized the North Western Corp. the installation, use & maintenance of a 0.6kV buried power line in the Moose Crk drainage. This action includes a 30-foot power line & power pole.	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Jericho Mountain Continental Divide Trail Reroute	April 2003	This decision implemented new trail construction of approximately 2.2 miles of the CDNST #337 to align the trail to the Continental Divide as per Agency guidance.		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Telegraph Cr. Rd. 495 Surfacing and Drainage	2000	Road 495 recondition 8.4 miles; 12 inches grid rolled aggregate for 2.25 miles; 4 inches surface aggregate for .48 miles; construct 9 drain dips.		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. Also, the location along an open road system dilutes its impact for most species.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Commercial road use permits	1994-2000	These permits were issued for short term commercial use of Forest Service Roads. [D&G		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
		Lumber (2000), Minihaha Creek (1997), Bullion Parks/Telegraph Creek (1994), Stowe (1994),			wildlife which would add to the displacement effects associated with this past project.
Recreational special use permit	1998 - 2002	These permits are issued for short term use on public lands for recreational activities/gatherings. MT DOC (1998), Society for Creative Anachronism (2002), Elliston VFD (1998),		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Monarch Creek Trail Reconstruction	June 1998	Construction/reconstruction of the non-motorized Monarch Creek Trail #362 in the Electric Peak Roadless Area. Work includes installation of 65 water-bars , 3 wooden stock bridges, and 3 French Drains; reconstruction of 5 switchbacks; construction of a turnpike approximately 25 meters long, obliterate approximately 727 meters of abandoned trail and grub approximately 560 meters of existing trail.		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Treasure Mountain Snowmobile Trail Relocation	November 1997	This decision approved relocating segments of the groomed snowmobile trail in the Treasure Mountain area. Segments included Little Blackfoot River Road, FSR 1857-A1,		No impacts to wildlife associated with the re-routing.	There are no anticipated cumulative effects

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
		FSR 1857, FSR 1857-D1, FSR 1859 to the Telegraph Creek Road. Another section starts on FSR 1857 at the junction with FSR 1857-B1 and proceeds on FRS 157-B1 to Ontario Creek Road 123.			
Montana Bureau of Mines and Geology Seismic Monitoring Station	July 1995		Installation, use, and maintenance on a seismic monitoring station on lands administered by the Helena Ranger District.	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects
Issuance for Mining Plan of Operations	1989-1993	Irish Hill-Phleps Dodge Mining Co. (1993): exploratory drilling on ridge between Trout Creek and Spotted Dog Creek drainages; Clemmer Gulch & O'Keefe Mountain (1992): headwaters of Telegraph & Ontario Creek drainages, eight drill sites with 60x60 foot drill pads with approximately 2 acres of surface disturbance; Phelps Dodge Karger II (1990): exploratory drilling with reclamation work; Karger Lode (1989): exploratory drilling with reclamation work; Phelps Dodge Mining Co. (1989): EA conducted		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects.
Minnehaha Trail Project	September 1991		Decision authorized the development of a trail route between the Moose Creek work center and Forest Road 527 using an old abandoned railroad bed.	The new trail followed an existing route in an area with relatively high levels of human activity. It has not introduced new disturbance. Effects to wildlife were minimal.	There are no anticipated cumulative effects.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
			Activities included construction of a bridge, installing a culvert, pruned trees and shrubs, removed rocks, and relocated power poles off the railroad bed.		
Hat Creek Cattle and Horse Allotment	November 1990		This was an updated allotment management plan for the Hat Creek C&H allotment. This involved the incorporation of two sections of land from the adjacent Spotted Dog/Trout Creek allotment and the implementation of a three pasture deferred rotation system. Approximately 5 miles of barbed wire fence was also constructed.	This retained the basic pattern of competition for forage on summer range between cattle and native grazers, but continued the trend of reducing competition in key areas and improving range condition with each AMP revision.	Alternative 1 could contribute cumulative effects due to forage conditions that are expected to improve in forested understories as a result of mountain pine beetle related mortality. The action alternatives could also contribute cumulatively as a result of treatments in dead and dying stands that will open up those stands thereby improving forage.
MacDonald Pass Cattle and Horse Allotment	November 1990		This was an approved updated allotment management plan for the MacDonald Pass C&H allotment. This involved the implementation of a three pasture deferred rotation system and construction of approximately 0.5 miles of barbed wire fence.	This retained the basic pattern of competition for forage on summer range between cattle and native grazers, but continued the trend of reducing competition in key areas and improving range condition with each AMP revision.	Alternative 1 could contribute cumulative effects due to forage conditions that are expected to improve in forested understories as a result of mountain pine beetle related mortality. The action alternatives could also contribute cumulatively as a result of treatments in dead and dying stands that will open up those stands thereby improving forage.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
Rimini Abandoned Mine Reclamation Project Drilling of Water Quality Monitoring Well	July 1988		Approved a plan to drill a well for sampling groundwater quality near Ten-Mile Creek,	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Road Drainage Repairs	Completed 2009	Roads 123, 227, 495, 495-D1, 495-E1, 527, 1856, 1856-D1, 1856-E1, 1856-J1, 1857, 1857-D1, 1863, 1863-A1 and 4104; Blading 43.2 miles, construct drain dips 231		Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. Also, the location along an open road system dilutes its impact for most species.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Kading Campground	2010-2011		A culvert near the campground entrance has been replaced with a bridge that meets 100-year flood requirements. Beetle infested hazard trees have been removed in Kading CG & around Kading Cabin for visitor safety. Shrubs & trees have been planted to improve aesthetics. Camping spurs have been lengthened & widened w/ some converted to pull-through spurs. New picnic tables and fire rings have been installed	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. The project also should have improved riparian conditions. See Forestwide Hazardous Tree Removal and Fuels Reduction Project above.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project. See Forestwide Hazardous Tree Removal and Fuels Reduction Project above.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary	Effects of Past Activity	Contribution of Project to Cumulative Effects
			throughout the campground & at Kading Cabin to American Disability Act (ADA) standards. Pathways to the existing vault toilets have been widened & improved to ADA standards. Curb stops have been installed & a new visitor information kiosk has been erected at the campground entrance.. A single-panel kiosk has been installed at the nearby Blackfoot Meadows Trailhead.		
Kading Road	2011		Aquatic Organism Passage Legacy Road: Road 227 replace undersized Kading Creek culvert with a 30' span by 26' wide concrete bridge	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should have resumed. The project also should have improved riparian conditions.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.
Spotted Dog Land Purchase	2010		In 2010 the State Of Montana purchased 27,616 acres of land from Rock Creek Cattle Co. The land is now being managed by Montana Fish Wildlife and Parks as a Wildlife Management Area.	This purchase has long term beneficial effects to wildlife including elk and mule deer; short term effects include disturbance associated with open roads that were otherwise unavailable to the public while this parcel was in private ownership.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project.

Table D-E-3. Ongoing/present activities

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
Private road special use permits	Ongoing	These permits were issued to private landowners to access their private inholdings on roads that are primarily not open to public use, some have seasonal closures. They are located throughout the project and combo boundary. Some may have had road improvements, and all involve private maintenance.		These permits cumulatively increase the total motorized access across the Forest. Displacement of wildlife is periodic, temporary, and very local. The connected actions on the private land (human residence) are inevitably more disruptive than the fleeting human presence on the access routes.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
Recreation Residence Tracts	Ongoing		Residences are authorized under a 20-year Special Use Permit. Lots are typically 1 acre or less in size. These cannot be utilized as a primary residence and can only be used less than six months in a calendar year. One recreation residence is permitted within the Moose Creek Villa Tract that falls within the combo boundary.	Periodic but long-term centers of human activity in otherwise suitable wildlife habitat, resulting in local species such as elk, deer, bears, bobcats, goshawks, etc. altering habitat use patterns to accommodate the residences. Those at Forest Heights (just to the north of Highway 12) are the most problematic as they lie in an area frequently used by wide-ranging species moving along the Continental Divide.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
2 Campgrounds 1 Day Use Areas 2 Rental Cabins	Ongoing		Campgrounds are open seasonally from May through October and include: Kading and Moose Creek. Day use areas: Continental Divide Trailhead. Rental Cabins: Kading and Moose Creek	Effects are variable, depending on the type of facility and its location. All represent focal points of human activity that tend to deter wildlife species averse to human presence. Most are active primarily from late spring through mid-fall. Campgrounds are most disruptive because of their size and regular use. The Moose Creek cabin is adjacent to a busy County road and adds little to that existing condition. Use of trailheads is generally low-key and sporadic.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
Routine Use and Maintenance of Non-motorized Forest Trails for Summer Use	Ongoing	There are some non-motorized trails in the Ten Mile Drainage including the Switchback Ridge Trail. Other areas: Continental Divide National Scenic Trail, Little Blackfoot Meadows trail, Monarch, and Larabee Gulch. These trails receive routine maintenance and clearing of debris annually		Trail work generates temporary displacement of wary wildlife species from around the moving work sites. Disruption is of short duration and low intensity. Impacts are minor. Trail use facilitated by the maintenance is low-key and sporadic.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
HMO closures on the Helena Ranger District	On-going	Access controls or the permanent closure of mine opening on the Helena Ranger district to ensure public safety. Closures will take place at multiple locations across the Helena Ranger District. More expected closures in 2015 and beyond.		Temporary local displacement of wildlife from the immediate site—minor impact. Retention of habitat opportunity for bats.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
Routine Use and Maintenance of Forest trails and areas for over-snow winter use	Ongoing	The Macdonald Pass cross country ski trails are used throughout the winter and are regularly groomed by the Last Chance Nordic Ski Club. The formerly Quigley Group Use Area below the pass is sometimes used by cross-country skiers. The former Quigley Group Use Area/Campground is sometimes used by cross-country skiers. The former Moose Creek Group Use Area is utilized as a snowmobile trailhead accessing a trail system that connects to Bullion Parks over to Jericho Mountain and down along the Hahn Creek Road tying into the Little Blackfoot Road and Kading Cabin /Limburger Springs areas. There is also a snowmobile trailhead located off of the Little Blackfoot Road near the Lions Sunshine Camp. Please refer to the Divide Travel Plan alternative maps for specific trail locations and areas open to over-snow use.		The MacDonald Pass ski sites (including Quigley Group Use Area and just to the north of Highway 12) are in an area of relatively high year-round human activity. Use is confined to predictable routes: some wildlife species detour around, others take advantage of the packed trails, some range through only at night, and others keep on with business as usual. The Moose Creek trailhead is a compact area in a road corridor with relatively high traffic levels. The trail system radiating out from the trailhead, however, is dispersed and extensive.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
MacDonald Vista Point	Ongoing		This vista point is located to the south of MacDonald Pass and is a popular observation site. It accesses the Continental Divide National Scenic Trail. During the winter months, this area has been utilized for non-motorized environmental education programs.	This project adds to the relatively concentrated human activity and development in the vicinity of MacDonald Pass—which lies near the center of a travel corridor/linkage zone for a number of wide-ranging species.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
Special Recreation Use Permit Helena Lion's Sunshine Camp	Ongoing	This authorization is classified as an Organizational Camp issued to the Helena Lion's Club to manage and operate the Lion's Sunshine Camp located in the Blackfoot River drainage on NF lands. The camp provides recreational opportunities in a rural environment to families and youth oriented groups. This camp has been under a special use permit since 1943. (use code 113)		This project has the potential to disrupt wildlife movement; however, it's been in place for so long that most, if not all, wildlife have adjusted their movement patterns.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
Electronic Sites south of Hwy 12 on MacDonald Pass	Ongoing		The south site retains 1 authorized airport beacon near the Vista Point overlook.	Adds to the relatively concentrated human activity and development in the vicinity south of MacDonald Pass—which lies near the center of a travel	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
				corridor/linkage zone for a number of wide-ranging species.	wildlife which would add to the displacement effects associated with this ongoing project.
Routine Use and Maintenance of Open Forest Roads	Ongoing	Routine maintenance not necessarily annually includes blading, brushing, culvert cleanout, etc. Use of Forest Roads varies by route and season.		A series of temporary local displacement episodes for local wildlife species. Its location along open road system dilutes its impact for most species: minor impact.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
Power Utilities, Phone Utilities, Yellowstone Gas Pipeline, & Touch America Fiber Optic Lines	Ongoing		Utility lines are authorized under the terms of a special use permit. The gas and fiber optic line are co-located. Routine maintenance are accepted and understood under the terms of the permit. Located at & near MacDonald Pass.	Temporary, low-profile disturbance of local wildlife. Minimal impact.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
3 Natural Resource Conservation Service Snotel Sites under a special use permit	Ongoing		The NRCS maintains three sites for monitoring snow depth and water content under a special use permit. They are located near Ten Mile Creek.	No measureable effects to wildlife.	There are no anticipated cumulative effects.
Timber Harvest on Private or other non FS lands.	Ongoing	Timber harvest may occur on private lands on unspecified acres, primarily tractor logging within the planning area.		This activity more or less mimics the effects of Forest timber harvest/fuels treatment in the 2010-2014 period. Most recent harvest has been of dead trees: thus reducing short-term hiding cover, but having little effect on snowshoe hare	Alternative 1 would contribute to the effects of past timber because forested stands that are killed by mountain pine beetles would revert to early seral stages similar to those early seral stands that were created as a result of regeneration harvest from

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
				habitat or goshawk nesting habitat. Snag numbers decrease locally.	the 1980s through today. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project. The action alternatives would also removing short term hiding cover, lynx habitat, and goshawk nesting habitat.
Noxious Weed Treatment on National Forest Lands	Ongoing	Herbicide treatment is primarily along roads and in patches that are accessible to mechanized equipment (spraying with ATVs) and/or by hand, biological (insects), goats/sheep, and aerial spraying. Treatment areas are identified in the EIS/ROD and are continually updated and treated as new infestations are located.		Over the long term, these operations gradually improve the quality of foraging habitat for native species. Temporary displacement of some local species during active spraying operations.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
Grazing Activities on Private Lands	Ongoing	Grazing of cattle, sheep and horses on private lands within the Telegraph Project and Combo boundary. This may result in impacts to riparian vegetation, stream banks, and upland vegetation. There will also be results to vegetation management, forage production, and economic well-being.		This activity adds to the competition for forage on summer range between domestic livestock and native grazers (esp. elk and mule deer)—but not to the point that summer range conditions are limiting for native species.	There are no cumulative impacts associated with Alternative 1. The action alternatives include prescribed fire treatments that will impact grass and shrublands in the short term while enhancing these communities in the long term. There may be some short term cumulative impacts associated with the prescribed burning relative to grazing activities.
Dog Creek Grazing Allotment	Ongoing		1,729 acres within the combo boundary; 80 permitted cow/calf pair; 92 permitted use days; start of permit is in July; resides west of the divide for season long grazing. Data collected 2009.	This activity adds to the competition for forage on summer range between domestic livestock and native grazers (esp. elk and mule deer)—but not to the point that summer range conditions are limiting for native species.	There are no cumulative impacts associated with Alternative 1. The action alternatives include prescribed fire treatments that will impact grass and shrublands in the short term while enhancing these communities in the long term. There may be some short term cumulative impacts associated with the prescribed burning relative to grazing activities.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
			Grazing permits are issued on a 10 year cycle.		
Hat Creek C&H Grazing Allotment	Ongoing		74 acres in the project area, 8,207 within combo boundary;140 permitted cow/calf pair; 102 permitted use days; start of permit in late June; resides west of the divide and is under a deferred grazing system. Data collected 2009. Grazing permits are issued on a 10 year cycle.	This activity adds to the competition for forage on summer range between domestic livestock and native grazers (esp. elk and mule deer)—but not to the point that summer range conditions are limiting for native species.	There are no cumulative impacts associated with Alternative 1. The action alternatives include prescribed fire treatments that will impact grass and shrublands in the short term while enhancing these communities in the long term. There may be some short term cumulative impacts associated with the prescribed burning relative to grazing activities.
MacDonald Pass Grazing Allotment	Ongoing		3,077 acres within the combo boundary; 104 cow/calf pair; 115 permitted use days; start of permit in late June; resides on both sides of the divide and is under a deferred grazing system. Grazing permits are issued on a 10 year cycle.	This activity adds to the competition for forage on summer range between domestic livestock and native grazers (esp. elk and mule deer)—but not to the point that summer range conditions are limiting for native species.	There are no cumulative impacts associated with Alternative 1. The action alternatives include prescribed fire treatments that will impact grass and shrublands in the short term while enhancing these communities in the long term. There may be some short term cumulative impacts associated with the prescribed burning relative to grazing activities.
Slate Lake C& H Grazing Allotment	Ongoing		827 acres in the project area, 9,331 acres within the combo boundary; 205 permitted cow/calf pair; 92 permitted use days; start of permit in mid June; deferred grazing system; resides west of the divide. Data	This activity adds to the competition for forage on summer range between domestic livestock and native grazers (esp. elk and mule deer)—but not to the point that summer range conditions are limiting for native species.	There are no cumulative impacts associated with Alternative 1. The action alternatives include prescribed fire treatments that will impact grass and shrublands in the short term while enhancing these communities in the long term. There may be some short term cumulative impacts associated

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
			collected 2009. Grazing permits are issued on a 10 year cycle.		with the prescribed burning relative to grazing activities.
Spotted Dog Grazing Allotment	Ongoing		8,453 acres within the combo boundary; 245 permitted cow/calf pair; 102 permitted use days; start of permit is in July; resides west of the divide for season long grazing. Data collected 2009. Grazing permits are issued on a 10 year cycle.	This activity adds to the competition for forage on summer range between domestic livestock and native grazers (esp. elk and mule deer)—but not to the point that summer range conditions are limiting for native species.	There are no cumulative impacts associated with Alternative 1. The action alternatives include prescribed fire treatments that will impact grass and shrublands in the short term while enhancing these communities in the long term. There may be some short term cumulative impacts associated with the prescribed burning relative to grazing activities.
Tenmile Priest Pass C&H Grazing Allotment	Ongoing	1,730 acres in project area, 5,816 acres within the combo boundary; 200 permitted cow/calf pair; 107 permitted use days; start of permit mid-June; rest rotation; resides on both sides of the divide. 2003 Contract for the Priest Pass and Black Mountain allotments, range conditions and weed inventories were completed under a contract. In 2009 proper functioning condition was reached on Mike Renig. Grazing permits are issued on a 10 year cycle.		This activity adds to the competition for forage on summer range between domestic livestock and native grazers (esp. elk and mule deer)—but not to the point that summer range conditions are limiting for native species.	There are no cumulative impacts associated with Alternative 1. The action alternatives include prescribed fire treatments that will impact grass and shrublands in the short term while enhancing these communities in the long term. There may be some short term cumulative impacts associated with the prescribed burning relative to grazing activities.
Northwestern Energy Powerline	Ongoing		Hazard tree removal along powerline corridor in Tenmile drainage and MacDonald pass.	Loss of snags along powerline corridors; coarse woody debris is generally left in place. One of several projects removing hiding cover & standing dead tree habitat 5-10 years before these components would have been lost by natural attrition.	Alternative 1 would contribute to the effects of past timber because forested stands that are killed by mountain pine beetles would revert to early seral stages similar to those early seral stands that were created through powerline maintenance. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this past project. The action

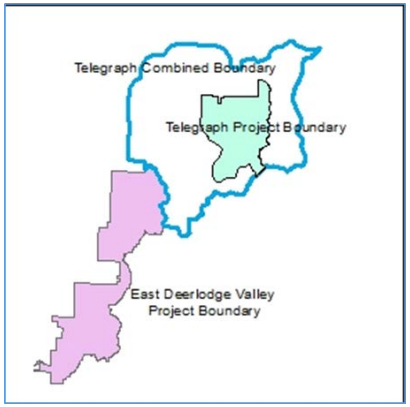
Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
					alternatives would also removing short term hiding cover, lynx habitat, and goshawk nesting habitat.
EPA- Luttrell Repository	Ongoing		2014 & 2015: A two year work plan is being implemented so that the cost of opening Luttrell Repository and treatment of waste water resultant from opening the repository can be saved and used to further remedial actions: this approach requires consolidation of mine waste into stockpiles to be hauled to Luttrell Repository in 2015. In 2014, EPA conducted clearing & grubbing so as to establish transport roads for Off Road Waste Hauling Vehicles at the National Extension mine waste site (most accessible from the Basin Side and near the ridge) and the Bunker Hill mine group (located South of Rimini).	This adds to the other human activity in the vicinity of the Continental Divide which is used as a travel corridor/linkage zone for a number of wide-ranging species. This would result in temporary displacement of wildlife using this corridor.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
Helena Mineral Society-Crystal Mine	Ongoing	Sally Ann Creek. T8N, R6W, Section 2		Potential disturbance to bats that may inhabit the mine.	There are no anticipated cumulative effects.
Personal Use Firewood and	Ongoing	Firewood gathering occurs across the forest.		Firewood cutting removes dead trees along roadsides and reduces snag	As trees continue to die in the project area due to mountain pine beetle mortality and as they ultimately fall

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
Post and Pole permits				availability in the short term and down woody debris in the long term.	over, Alternative 1 will slightly add to the effects of firewood removal on standing snag habitat. The action alternatives will result in snag reductions within respective treatment units; although Forest Plan standards will be met and snags will remain abundant in the Project area, there will be some cumulative impacts in conjunction with firewood retrieval.
University of Montana-Helena Outfitter/Guide Permit	Ongoing	Permit issued for a variety of guided recreational activities in numerous locations on the Helena ranger district.		No effects to wildlife.	There are no anticipated cumulative effects.
Red Mountain Flume/Chessman Reservoir Project	Ongoing		Currently implementing a fuel reduction project around Chessman Reservoir and the associated water flume infrastructure. Treatments are designed to reduce hazardous fuels around existing infrastructure. Approximately 500 total acres of fuels treatments and harvest are expected.	The Red Mountain Flume/Chessman Reservoir Project is primarily removing dead trees – snags – along the Chessman Reservoir and Flume; however, Forest Plan standards for snags are being met. The project treats approximately 332 acres in the area around Chessman Reservoir that currently serves as the main movement corridor through the project area. All dead trees and the bulk of the woody debris would be removed from a broad swath around the reservoir and around some of the large meadow to the south, leaving open-grown forest of widely varying density, (depending on the distribution of green trees that have survived the beetles. The forest would be allowed to regenerate but would be managed for relatively wide spacing of overstory trees and no effective ladder fuels. The loss of cover in riparian areas associated with the project may be	Alternative 1 would contribute to the effects of the Red Mountain Flume project because forested stands that are killed by mountain pine beetles would revert to early seral stages similar to those early seral stands that were created as a result of regeneration harvest in the Red Mountain Flume project area. Alternative 2 would result in the removal of 2,254 acres of hiding cover in the Jericho herd unit. Alternative 3 would result in the removal of 1,307 acres of hiding cover in the Jericho herd unit. Alternative 4 would result in the treatment of 2,693 acres of hiding cover in the Jericho EHU of which 2,240 acres would be removed (precommercial thinning in Alternative 4 is designed to retain hiding cover by limiting spacing of trees to 10-12 feet). The action alternatives would add cumulatively to the effects associated with the Red Mountain Flume project.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
				disruptive to small mammals dependent on riparian areas. Boreal toads may be affected via effects to upland habitats which would result in a reduction of future woody debris accumulation. Logs and other debris provide some of the cover adult toads use when moving through upland areas in summer. Immediate post-project environments would be similar in treated and untreated sites. But over the next 15 years, treated sites would accumulate much less deadfall than untreated areas—exposing toads to slightly more risk when ranging away from riparian areas. Approximately 4 acres of hiding cover are affected in the Jericho herd unit; most of the project is outside of and to the east of the Jericho EHU so effects to elk in general associated with this project are minimal. Twenty two acres of lynx multistory hare habitat are treated in di-05 which overlaps with the Telegraph project. Twelve acres of early stand initiation are treated; and 366 of 'other' habitat which includes mid-seral and stem exclusion stands.	The action alternatives would not result in the removal of any lynx habitat in LAU di-05; therefore there should be no cumulative effects associated with the Telegraph project relative to the Red Mountain Flume project. All action alternatives will result in the removal of some snags with potential impacts to snag associated species adding to the effects of the Red Mountain Flume project. However, Forest Plan standards will be met for snags.
Monarch Mineral Sampling	Ongoing	Mineral sampling and exploration activities to collect samples for testing from unprocessed mine material piles.		Potential disturbance to local wildlife.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this ongoing project.
Rimini Substation	Ongoing		Baxendale Fire Dept. is proposing to pour a	This project would have no effect on wildlife.	There are no anticipated cumulative effects.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
			concrete slab and construct a 3 bay fire station to store firefighting equipment and to utilize existing underground tanks for the filling of fire engines during suppression activities		
Ten Mile Road Improvement Project (County Route 695) also known as Rimini Road.	Ongoing		Improve road way from the junction with Hwy 12 to the junction with the Chessman Reservoir intersection, just over 6 miles in length. Improvements would include replacement of three bridges and associated railings, bridge drainage improvements, upgrading road signs, re-alignment of road segments, and paving.	Improvement of the road would increase vehicle speeds as well as the number of vehicles venturing up the road. The result in terms of wildlife displacement would probably be similar to what it is at present; but the numbers of wildlife species, large and small, hit by vehicles on the road would increase. Increased use of this road would also translate into heavier traffic on Helena NF roads that emanate from it—namely the Beaver Creek Road and the upper Telegraph and Banner Creek Roads.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with this reasonably foreseeable project.
Divide Travel Planning	Ongoing	The Helena National Forest signed the North Divide Travel Plan in 2016, and will begin implementation in 2016 with continued on the ground disturbance of individual projects occurring through 2020.		The Decision for the Divide Travel Plan will be beneficial to key wildlife species (esp. elk, deer, black bears, grizzly bears, lynx, wolves, wolverines, goshawks, pileated woodpeckers, marten) because of proposed road closures, elimination of unauthorized motor trails, snowmobile area closures, and clarification of the authorized snowmobile route system. Open route densities would decrease, the size of elk security and intermittent refuge areas and patches of unroaded habitat in general would increase, and disruption of	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives would add cumulatively to the Divide Travel Plan relative to those roads that would be used for project activities and those that would remain open under the Divide Travel Plan.

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
				a number of key wildlife sites by motor vehicles would be terminated.	
East Deer Lodge Valley Landscape Restoration Management Project	Ongoing		Beaverhead-Deerlodge NF. Purpose is to achieve Forest Plan goals including timber management, aquatic improvement, and wildlife habitat improvement. Proposed activities include timber salvage, commercial thinning, sediment reduction, fish passage, road and trail decommissioning. The ROD identified Alternative 3, modified, as the selected alternative which includes 2,541 acres of commercial harvest, 8,768 acres of restoration, and various other restoration activities including riparian habitat improvement and restoration activities related to roads and trails.	The project as designed will decrease open motorized roads and trails in the analysis area, increase the secure habitat, and will minimize disturbance to grizzly bears by following travel restrictions and implementing food storage requirements. However, due to the current high road density and high level of human use throughout the analysis area, the current condition of the project area may still result in displacement grizzly bears from this area that they may have used otherwise. For lynx, the project will create over 4,000 of snowshoe hare habitat 15 to 40 years in the future as treatment units continue to grow; the project will remove just over 200 acres total of stand initiation (38 acres) and multistory (199 acres) snowshoe hare habitat. Forage will be created for elk on winter range; however, there will be some short term disturbance to elk on winter range associated with the few winter logging units in the project. Elk may also be displaced in the units in secure areas that are proposed for treatment but this impact will be short in duration. The project is located in HD 215. The following figure shows the relationship of the Telegraph project to the East Deerlodge Valley project.	Alternative 1 would contribute to the effects of timber harvest in the East Deer Lodge Valley Landscape Restoration Management Project because forested stands that are killed by mountain pine beetles would revert to early seral stages similar to those early seral stands that would be regenerated in the Restoration project. The action alternatives would contribute cumulatively to effects associated with East Deerlodge Valley project relative to the linkage corridor along the Continental Divide (potential effects to lynx, grizzly, and wolverines). Alternative 2 would result in the treatment of 212 acres of lynx habitat in LAU di-03 and 4,645 acres of lynx habitat in LAU di-04. Alternative 3 would result in the treatment of 150 acres of lynx habitat in LAU di-03 and 2,592 acres in di-04. Alternative 4 would result in the treatment of 277 acres of lynx habitat in LAU di-03 and 5,124 acres in LAU di-04. The early stand initiation, stand initiation, and multistory habitat outside of the WUI in Alternatives 2 and 3 would be dropped from treatment if these alternatives are selected. In other words, these alternatives are not adjusted for field validation. Alternative 4 reflects the removal of treatment units in those habitats

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
					outside of the WUI based on field validation. These impacts will add cumulatively to those effects associated with the East Deerlodge Valley project primarily through the creation of early stand initiation habitat. Alternative 2 would result in the removal of 2,254 acres of hiding cover in the Jericho herd unit and 3,629 acres in the Spotted Dog – Little Blackfoot herd unit. Alternative 3 would result in the removal of 1,307 acres of hiding cover in the Jericho herd unit and 2,218 acres in the Spotted Dog – Little Blackfoot herd unit. Alternative 4 would result in the treatment of 2,693 acres of hiding cover in the Jericho EHU of which 2,240 acres would be removed (precommercial thinning in Alternative 4 is designed to retain hiding cover by limiting spacing of trees to 10-12 feet). Hiding cover would be treated on 4,097 within the Spotted Dog – Little Blackfoot herd unit of which 3,513 acres would be removed. The action alternatives could be additive in terms of cumulative effects relative to the East Deerlodge Valley project; however, elk in that project area generally do not utilize the Telegraph project area so effects are expected to be minimal. All action alternatives would result in road decommissioning: Alt 2 results in 8.5 miles of decommissioning, and Alts 3 and 4 in 3.4 miles. The

Activity/Project Name	Decade/Year	Telegraph Project Area	Combined Boundary (Includes Project Area)	Effects of Ongoing Activity	Contribution of Project to Cumulative Effects
					decommissioning would reduce the impacts associated with past road reconstruction.

Table D-E-4. Reasonably foreseeable activities

Activity/ Name	Estimated Implementation	Scope of Activity	Effects of Reasonably Foreseeable Activity	Contribution of Project to Cumulative Effects
Tenmile South Helena	Estimated implementation 2017	The purpose of the project is to maintain consistent quantity and quality of water within the municipal watershed and improve conditions for public and firefighter safety across the landscape in the event of a wildfire. Approximately 25,027 acres are proposed for treatment (24,020 on NFS Lands and 1,007 on BLM Lands) which would include a combination of commercial harvest of trees, non-commercial vegetation treatments and prescribed fire.	The proposed action would result in the following effects to key wildlife in the project area: approximately 7,150 acres of hiding cover could be removed in Alternative 2 in the Jericho EHU. The Jericho EHU overlaps with the Telegraph project. The Tenmile project could also result in the removal of up to 15 acres of multistory hare habitat and 47 acres of 'other' habitat [stem exclusion, mid-seral, etc.) in LAU di-04 (which overlaps with the Telegraph project). LAU di-05 overlaps with the Telegraph project as well; however, the Telegraph project does not include any treatments in LAU di-05.	Alternative 1 would contribute to the effects of the Tenmile South Helena project because forested stands that are killed by mountain pine beetles would revert to early seral stages similar to those early seral stands that would be created by treatments in the Tenmile South Helena project area. Alternative 2 would result in the treatment of 1,184 acres of multistory hare habitat in LAU di-04, 22 acres of stand initiation habitat, 11 acres of early stand initiation habitat, and 1,298 acres of 'other' habitat. Alternative 3 would result in the treatment of 636 acres of multistory hare habitat in LAU di-04, 17 acres of stand initiation habitat, 6 acres of early stand initiation habitat, and 610 acres of 'other' habitat. Alternative 4 would result in the treatment of 1,992 acres of multistory hare habitat in LAU di-04, 809 acres of stand initiation habitat, 352 acres of early stand initiation habitat, 1,080 acres of stem exclusion, and 894 acres of 'other' habitat. The early stand initiation, stand initiation, and multistory habitat outside of the WUI in Alternatives 2 and 3 would be dropped from treatment if these alternatives are selected. In other words, these alternatives are not adjusted for field validation. Alternative 4 reflects the removal of treatment units in those habitats outside of the WUI based on field validation. These impacts will add cumulatively to those effects associated with the Tenmile South Helena project primarily through the creation of early stand initiation habitat. Alternative 2 would result in the removal of 2,254 acres of hiding cover in the Jericho herd unit and 3,629 acres in the Spotted Dog – Little Blackfoot herd unit.

Activity/ Name	Estimated Implementation	Scope of Activity	Effects of Reasonably Foreseeable Activity	Contribution of Project to Cumulative Effects
				Alternative 3 would result in the removal of 1,307 acres of hiding cover in the Jericho herd unit and 2,218 acres in the Spotted Dog – Little Blackfoot herd unit. Alternative 4 would result in the treatment of 4,097 acres within the Spotted Dog – Little Blackfoot herd unit of which 3,513 acres would be removed. The action alternatives could be additive in terms of cumulative effects relative to the Tenmile South Helena project; however, elk in that project area generally do not utilize the Telegraph project area so effects are expected to be minimal.
North Divide Restoration	Estimated implementation 2016	The Helena National Forest will begin the small NEPA planning process for the NDR in 2016 with planned implementation the same year.	Possible temporary displacement of wildlife during project implementation. However, wildlife use of the area should resume shortly after activities have been completed upon which wildlife should benefit from the restoration activities which include road decommissioning.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with the proposed project.
Lily Orphan Boy	Implementation is planned for 2016	Department of Environmental Quality mine waste removal. This will involve the removal of 4000 yards of contaminated soil and restoration of a stream channel. National Forest System roads will be utilized to	Possible temporary displacement of wildlife during project implementation; however, wildlife use of the area should resume shortly after activities have been completed.	There are no anticipated cumulative effects associated with Alternative 1. The action alternatives may result in temporary displacement of local wildlife which would add to the displacement effects associated with the proposed project.

Activity/ Name	Estimated Implementation	Scope of Activity	Effects of Reasonably Foreseeable Activity	Contribution of Project to Cumulative Effects
		deliver the contaminated soil to the Luttrell Repository.		
Blackfoot #1	Planning will begin in 2016	Trout Unlimited will be conducting site investigations, engineering evaluations/cost analysis on restoration work along the Little Blackfoot River.	No anticipated effects.	No anticipated effects
Private Land Timber Harvest	Unknown	The Project area and Combined Boundary are surrounded by several acres of private land; there are also several small inholdings within both areas. There are no known activities, currently; however, it's reasonable to conclude that some timber harvest may occur in the foreseeable future.	Effects can't be quantified; however, there are potential impacts to a variety of species depending on the area in question and the magnitude and type of timber harvest.	Alternative 1 will not add cumulatively to private land timber harvest except in those situations where stands killed by mountain pine beetle result in young, seral stands. This will add to any regeneration harvest carried out on private land. The action alternatives will result in removal of some snags although Forest Plan standards will be met and snags will remain abundant in the Project are due to the mountain pine beetle. However, the reduction in snags associated with the action alternatives will add cumulatively to private land timber harvest. Furthermore, the action alternatives will result in the reduction in habitat for a variety of species which will add cumulatively to private land timber harvest.
Forest Plan Amendment to incorporate	Grizzly Bear Amendment	The purpose of the amendment is to incorporate relevant	Some of the standards and guidelines associated with this amendment have little to no	This proposed programmatic amendment and Forest Plan revision should provide standards and/or guidelines that, when implemented, could result in

Activity/ Name	Estimated Implementation	Scope of Activity	Effects of Reasonably Foreseeable Activity	Contribution of Project to Cumulative Effects
relevant direction from the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy Forest Plan Revision for the Helena-Lewis and Clark National Forest	Anticipated 2017 Forest Plan Revision Anticipated 2018	habitat-related direction from the Northern Continental Divide Ecosystem (NCDE) Grizzly Bear Conservation Strategy (GBCS) into the forest plans for the Helena, Kootenai, Lewis and Clark and Lolo National Forests (also referred to as "amendment forests") to have an integrated set of plan direction (referred to as plan components from this point forward) consistent across the national forests that are a part of the NCDE.	applicability to elk – i.e. food storage orders, special use permits for apiaries. The proposed action contains numerous standards and guidelines governing resource management on the Forest. This amendment, although not specific to elk, should guide design elements for future projects that could benefit elk and their habitat by minimizing management related disturbances and maintaining or enhancing available forage. Likewise, the revised Helena-Lewis and Clark Forest Plan should also provide standards and guidelines that benefit elk habitat.	habitat improvements for elk along with long term benefits associated with the Telegraph project.

Appendix E – Response to Comments on the Draft Environmental Impact Statement

Comments	Response to Comments
Letter 1: Bill R. Thomas	
Please Keep me on your mailing list. (1-1) Bill Thomas P.O. Box 15 Elliston, MT 59728	(1-1) Thank you for your comments.
Letter 2: Jean Public	
PUOBLIC COMMENT ON FEDERAL REGISTER EIS 2015-16938 AND EIS-2015-0184 I OPPOSE SLAS1NG AND BURNING OF SMALL TREES. (2-1) I OPPOSE PRESCRIBED BURNING WHICH KILLS PEOPLE FROM INHALING SMALL PARTICULATE MATTER TO CAUSE HEART ATTACKS. (2-2) IT KILLS ANIMALS THAT WAY TOO. THIS PLAN KILLS WILDLIFE THROUGH TAKING AWAY THEIR FOOD AND HOOMES FOR UP TO 10 YEARS. (2-3). THEY CANNOT SUSTAIN THEMSELVES WITHOUT A HOME AND FOOD. THEY DIE SO THIS PLAN IS AN ANIMAL KILLING PLAN IN TOTAL. THIS PLAN SUCKS. WHAT THIS PLAN TRULY IS IS A PLAN TO MAKE WORK FOR FS EMPLOYEES. (2-4).THIS PLAN IS ALL ABOUT GIVING THEM WORK TO DO ATTACKING THE FOREST. IT IS A SELF INTERESTED PLAN WHICH IN FACT IS A WAR ON NATURE. THIS PLAN SUCKS. IT SHOULD NOT BE FUNDED. IT IS A SELF INTERESTED PLAN FOR FS EMPLOYEES. THISCOMMENT IS FOR THE PUBLIC RECORD. PLEASE RECEIPT. JEAN PUBLI JEANPUBLIC1 , GMAIL.COM	(2-1) Thank you for your comment, this is discussed in the No Action Alternative. Depending on the treatment method proposed for each treatment unit, slashing of small diameter trees is necessary to either create a fuel bed for burning or remove damaged trees during harvest operations. The treatment descriptions in Chapter 2 of the FEIS describe the need to slash small trees for each of these treatment units. (2-2) Implementation of alternatives, as demonstrated in the smoke modeling in the Air Quality section of the FEIS demonstrates that with incorporated design features, all action alternatives would be in compliance with the land management plans. Compliance with air quality standards, specifically by not causing or contributing to any exceedances or violations of Federal or State standards and by cooperating with the Montana Air Quality Bureau in the Prevention of Significant Deterioration (PSD) program and State Implementation Plan (SIP). (2-3) The FEIS contains an in-depth analysis for all species and habitats expected to be affected by the action alternatives. The action alternatives would have some negative impacts on some wildlife species, depending on the species/habitat and nature of the proposed activities. The FEIS discusses the potential for displacement associated with the action alternatives which in turn could lead to risks of mortality (See the *Grizzly Bear* and *Boreal Toad* sections). By and large, the action alternatives, while removing habitat and causing temporary displacement, would not affect species viability. See the *Biological Evaluation* and *Viability Analysis* sections and the analyses for each habitat and species in the FEIS. (2-4) Thank you for your comment.
Letter 3: Jim Backstrom	
Please Keep me on your mailing list. (3-1) Jim Backstrom P.O. Box 72 Elliston, MT 59728	(3-1) Thank you for your comments.

Comments	Response to Comments
Letter 4: Bruce Thomas	
Please Keep me on your mailing list. (4-1) Bruce Thomas P.O. Box 30 Elliston, MT 59728	(4-1) Thank you for your comments.
Letter 5: Department of the Interior	
The U.S. Department of the Interior has reviewed the Draft Environmental Impact Statement for the Telegraph Vegetation Project, Helena National Forest, Montana, and has no comments on the document. The U.S. Fish and Wildlife Service advises that their concerns will be addressed through the Section 7 consultation process. (5-1)	(5-1) Thank you for your comments.
Letter 6: Bonnie Lovelace Montana Department of Environmental Quality	
Montana Department of Environmental Quality's (DEQ) thanks you for the opportunity to provide comment on the Draft Environmental Impact Statement (DEIS) for the Telegraph Vegetation Project. We support the Helena National Forest's efforts to improve overall forest health and watershed conditions.(6-1) The DEIS provides a thorough assessment of the potential benefits of proposed activities to sedimentation. While long term effects of healthy and resilient forest ecosystems will benefit watershed conditions, the activities proposed have the potential to degrade water quality and aquatic habitat in the short - term. (6-2) We encourage you to implement Alternative 3, which includes activities and best management practices to benefit sediment and habitat impaired streams in the watershed. Silvicultural activities and stormwater water runoff are exempt from MPDES permits. However, where planned roads cross stream channels, a 318 permit and possibly a 401 permit may be required. (6-3) A COE 404 permit may also be required. I highly recommend that once you have determined which permits are likely to be required, you plan a multi-agency meeting to discuss design and implementation issues and finalize which permits and authorizations are needed.(6-4) For the DEQ, you may contact Mindy McCarthy in the Water Protection Bureau at 406-444-6754. Additionally DEQ suggests the use of experienced contractors for implementing road decommissioning and instream work, including culvert replacement.(6-5) Contractors well experienced in this type of work ensure that projects are completed efficiently and effectively in ways that protect resources as intended. The Helena National Forest has been a key partner in addressing nonpoint sources of pollution. Thank you again for considering these comments. We look forward to working together as this project moves forward to ensure that watershed values are	(6-1)Thank You for your comment. (6-2) The analysis for the Telegraph project recognizes the potential for short-term water quality and aquatic habitat degradation, and has expanded the project design features in the Hydrologist and Aquatic Species specialist reports in the FEIS, to strengthen protection for these resources during and immediately following project implementation. Please refer to these reports for more detail. (6-3) The HLCNF recognizes the need to apply for any necessary state and federal permits for road-stream crossings and other activities affecting stream channels and wetlands in advance of project implementation. The Hydrology specialist report has been updated for the FEIS to indicate the potential need for Montana 318 permits for a Short-Term Water Quality Standard for Turbidity and Montana 401 Water Quality Certification, in addition to SPA 124 and CWA 404 permits. (6-4) The HLCNF agrees that a joint meeting with the appropriate state and federal agencies, including MDEQ and US Army Corps of Engineers, would be beneficial to discuss the project design and all necessary permitting and authorizations. (6-5) All contractors for road decommissioning, culvert replacement, and in-stream work will be evaluated based on prior experience working on similar projects with successful adherence to BMPs.

Comments	Response to Comments
maintained and improved. If you have any comments, please do not hesitate to contact me. Sincerely, Bonnie Lovelace Regulatory Affairs Manager Director's Office (406) 444-1760 REF # 15-080	

Comments	Response to Comments
Letter 7: Amy Platt U.S. Environmental Protection Agency Region 8	
The U.S. Environmental Protection Agency Region 8 has reviewed the U.S. Department of Agriculture Forest Service's (USFS's) Draft Environmental Impact Statement (EIS) for the Telegraph Vegetation Project. Our comments are provided for your consideration pursuant to our responsibilities and authority under Section 102(2) (C) of the National Environmental Policy Act (NEPA), and Section 309 of the Clean Air Act (CAA). <u>Project Background</u> The project area is located in the Helena National Forest about 15 miles southwest of Helena and 5 miles south of Elliston in Powell County, Montana, and includes a portion of the Jericho Mountain Inventoried Roadless Area (IRA). The Telegraph Vegetation Project is designed to be responsive to the mountain pine beetle (MPB) outbreak by ensuring diverse and sustainable forest stands and wildlife habitat in the future, improving conditions for fire suppression, recovering economic value of dead and dying trees, and maintaining and improving watershed values. The USFS has not identified a Preferred Alternative. Alternatives identified in the Draft EIS include the following: • Alternative 1 (No Action); • Alternative 2 (Proposed Action) includes approximately 6,750 acres of vegetation treatments such as pre-commercial thinning, harvest, and prescribed fire (total treatment acreage includes about 4,330 acres of burning activity); 8.5 miles of temporary road construction; and 6 stream crossing improvements; and • Alternative 3 (developed in response to scoping concerns related to wildlife, road construction, and the Jericho Mountain IRA) includes approximately 4,185 acres of vegetation treatments (including about 2,185 acres of burning activity), 3.4 miles of temporary road construction, and 9 stream crossing improvements. In addition, 30 miles of road decommissioning is proposed. <u>Comments and Recommendations</u> We appreciated the opportunity to provide scoping comments for this project in our December 1, 2009 letter. The Draft EIS provides detailed analyses of air and water resource conditions and potential project impacts. Our remaining recommendations are intended to further inform the decision to be made and the public's understanding of potential impacts to public health and the environment. Based on our review of the Draft EIS, the EPA's comments and recommendations focus on the following issues: project design features, mitigation and monitoring and water resources. These	

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issues serve as the basis for the EPA's EC-2 rating discussed at the conclusion of this letter. (1) Project Design Features, Mitigation and Monitoring Throughout the Draft EIS, general reference is made to design features, best management practices (BMPs), and conservation practices that will be implemented to reduce project impacts on resources. The reader is repeatedly referred to various specialist reports in the project record for the details of these measures. Impacts to resources are determined to ·be negligible based on the assumption that all mitigation measures are appropriately implemented.	
Recommendations: While we appreciate that impacts appear to be minimized by implementation of the design features and other project measures, the Draft EIS does not contain a compilation of the related measures. We strongly recommend that the Final EIS include a summary table of the design features, mitigation measures, BMPs and monitoring requirements that will be implemented to ensure protection of resources. (7-1) Since the referenced specialist reports are not readily available to the public, it is extremely difficult for the reader to understand what measures the USPS will require or to ascertain the adequacy of these measures. One option to address this recommendation would be to expand Appendix B, Table B-2, Management Area Direction, to include this information. We support the development of project design features, mitigation and monitoring measures to reduce the potential for water resource impacts. The inspection, maintenance and adjustment of BMPs will help protect groundwater and surface water resources. If the USPS has not already done so, we recommend the Final EIS consider the following mitigation measures: • Use existing landing locations and roads when reasonable; • Minimize landing size and design for proper drainage; • Require revegetation of all disturbed areas with native seed mix within the same growing season of disturbance, and monitor revegetation efforts for five years to ensure success; • Require special protections, such as buffer zones, for high quality riparian and wetland resources such as springs and fens; • Specify steps to protect any range improvements from vegetation treatment activities; • Monitor impacts from treatments proposed adjacent to high value water resources; and • Monitor the breakdown of hydrophobic soils following prescribed burns. We appreciate the detailed Draft EIS analysis and mitigation measures associated with proposed prescribed fire treatments. It is unclear whether additional project design features will be implemented to further reduce project air emissions. If the USFS	(7-1) Thank you for your recommendation. The design features, mitigation measures, BMPs and monitoring requirements will be incorporated into Chapter 2 of the FEIS and as an appendix to the draft Record of Decision. (dROD). (7-2) Design features were developed by each resource area for the DEIS and updated in the FEIS to reduce the potential for these resource effects. Chapter 2 of the FEIS and Appendix C of the draft Record of Decision (dROD) describe these design features. Specifically, design features have been developed for the breakdown of hydrophobic layers" vs "breakdown of hydrophobic soils". All prescribed burns are designed to meet Region 1 soil management guidelines. In lieu of monitoring hydrophobic layers for prescribed burns, we design the burns to meet Region 1 soil management guidelines, for ALL burns, rather than just the burns that

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has not already done so, we recommend considering the following measures: • Limit idling of heavy diesel equipment and transportation vehicles; • Require heavy diesel equipment to use cleanest available engines or retrofits with diesel particulate control technology; • Maintain engines; • Use low-sulfur or alternative fuels; • Expand application area for dust abatement measures; and • Implement detailed dust control plans particularly where dust is expected near occupied dwellings. (7-2)	may exhibit stronger hydrophobic layers than others. The USFS appreciates EPA's recommendations for reducing our project emissions. Our agency takes seriously the implementation of BMP's for activity emissions such as dust abatement and idling, especially in or around occupied dwellings. We will also consider your recommendations regarding vehicle fuels, engines, and maintenance standards and ensure our contract officers and fleet managers adhere to current USFS policy.
(2) Water Resources The EPA considers protection of water resources to be among the most important issues to be addressed in the NEPA analysis for vegetation management activities. As outlined in the Draft EIS, most treatments contemplated under the action alternatives (e.g., harvest, thinning, prescribed fire, and road construction) have the potential to adversely impact aquatic resources, including surface and ground waters, wetlands, streams, riparian areas, and their supporting hydrology. <u>Public Drinking Water Supply Sources:</u> The Draft EIS notes that one of the treatment objectives of the project is to reduce the likelihood of wildfire in the project area moving into the Tenmile Watershed, which provides a crucial water supply to the Helena Valley and is located just east of the project area. Recommendations: The Montana Department of Environmental Quality (MDEQ) has conducted source water assessments for groundwater and surface water sources of public drinking water supplies. The EPA recommends that the Final EIS include a generalized map, appropriate for public dissemination, showing the generalized locations of a11 source water assessment and protection areas associated with public drinking water supplies both within the project area and in the adjacent Tenmile Watershed. (7-3). Maps may be available from MDEQ or the EPA upon request. Please note that more specific maps, available from the MDEQ, should be utilized by the USFS when locating project activities. Please contact the MDEQ Source Water Protection Program Manager, Joe Meek, at 406-444-4806 or jmeek@mt.gov for more information. We also recommend that the Final EIS include a discussion of potential project impacts, design criteria and mitigation options for protecting these high value drinking water resources from potential project impacts. (7-4) In addition, the presence and handling of MPB-impacted trees has the potential to impact public water supplies if it leads to organic loading of area waterbodies. Organic matter has the potential to interact with disinfectants used in the drinking water treatment process to form disinfection byproducts, which are a human health concern. Organic loading may also decrease oxygen levels that can lead to the release of metals such as arsenic, manganese, and iron from sediments. The EPA	(7-3) The Hydrology specialist report has been updated to indicate that there are no public drinking water supplies classified as either surface water or groundwater under the influence of surface water in or immediately downstream of the project area. There is a public drinking water supply in one project-area watershed (Telegraph Creek) which is classified as groundwater not under the influence of surface water. In the absence of a surface water influence, no project-related impacts are anticipated for this system. The surface water intakes for the Tenmile Helena municipal water supply are located in the adjacent watershed on the other side of the Continental Divide, and therefore, the proposed actions are also not anticipated to impact those sources. (7-4) Please see response to comment 7-3 above. See also the Hydrology specialist report for a general discussion of potential impacts on project area streams, watershed-related design features, and mitigation measures. (7-5) The HLCNF agrees that organic loading to waterbodies is a potential concern for both disinfection byproduct formation and metals mobilization. However, please refer to comment 7-3 on the absence of any public drinking water supplies with surface water sources or influences in or downstream of the project area. Regardless of the location of public drinking water sources, the Hydrology specialist report and Chapter 2 of the FEIS specifies design features and BMPs designed to avoid erosion and sediment delivery to project-area streams. (7-6) Wetland surveys for the project area were conducted in 2009. A supplemental survey of the additional treatment units and roads that are newly proposed under

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recommends that the Final EIS assess the potential for organic loading impacts to drinking water treatment and supplies associated with any public water supply intakes in or downstream from the project area. (7-5) Wetlands/Riparian Areas: The Draft EIS describes areas of abundant wetland habitat in the project area. The reader is referred to the project record for data from a wetland survey conducted for this analysis which identified 23 wetlands in project treatment areas. It appears that no new riparian area surveys were conducted for this Draft EIS, but information is provided from previous analyses of grazing allotments in the project area. This information indicates that none of the riparian areas observed were rated as properly functioning condition and nearly half were rated as non-functioning. (7-6)	Alternative 4 was conducted in 2015 in order to update the analyses in the Hydrology specialist report. The most recent riparian condition data are from PFC surveys conducted in 2009 for grazing allotment stream segments only. The riparian condition of these reaches has not been re-surveyed, but grazing policies have not changed in the intervening years. Additionally, the 2011 USFS Watershed Condition Framework (WCF) provides a wider overview of the functional condition of the project-area watersheds. The *Affected Environment* section of the Hydrology specialist report has been updated to include the WCF functional rating for each watershed.
The wetlands typically found in mountain environments represent highly valuable upper montane and lower subalpine wetland ecosystems performing a variety of functions and values. The Executive Order 11990 - Protection of Wetlands (May 24, 1977) requires federal agencies to avoid to the extent practicable, long- and short-term adverse impacts associated with the destruction or modification of wetlands. (7-7) Fen wetlands provide important hydrological and water quality functions by improving water quality in headwater streams, and may support rare assemblages of aquatic invertebrates. They also provide critical ecological functions such as providing base flows to streams during late summer and/or drought periods. The U.S. Geological Survey has also determined that peat wetlands are especially efficient filters of metals dissolved in groundwater and surface water. The capacity to filter metals contributes to improved water quality by lowering dissolved metal content in streams (Owens, D.O., and Breit, G.N., 1995), which is particularly relevant to the project area regarding the water quality standard exceedances related to metals concentrations discussed below. The EPA recognizes fen-type wetlands as ecologically critical in that they provide local and regional biodiversity. The U.S. Fish and Wildlife Service (USFWS) designated fen wetlands a Resource Category 1 with respect to the USFWS Peatland Mitigation Policy. The mitigation goal of USFWS Resource Category 1 is no loss of habitat values and the Peatland Mitigation Policy places the protection and avoidance of fen wetlands as a priority during Clean Water Act (CWA) Section 404 reviews. Further underlining the uniqueness and importance of fen wetlands in Montana, the U.S Army Corps of Engineers revoked the use of the majority of Nationwide Permits in peatlands/fen-type wetlands to protect this unique wetland type. In the EPA's view, these wetland ecosystems are, for all practical purposes, non-renewable and irreplaceable. Recommendations: The EPA recommends that the Final EIS provide the wetland acreage in the project area, as well as a summary of the design features and BMPs that would be implemented to protect wetlands. (7-8) In addition, based on	(7-7) The design features in the Hydrologist specialist report have been expanded to include more details and specifics on protection measures for wetlands. See also the Soils and Wildlife specialist reports and Chapter 2 of the FEIS for additional wetland-related design features. (7-8) The total number of wetlands identified in the project area has been replaced with a more informative total acreage number in the FEIS Hydrology specialist report. However, the wetland surveys completed to this date are not comprehensive across the project area, especially in the case of small isolated wetlands. The design features and BMPs have been expanded to specify a no-ignition and no mechanical treatment buffer around

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information available from the Montana Natural Heritage Program, it appears that there may be fens in the project area, which may indicate the presence of high-functioning wetlands. Fen communities are very sensitive to hydrologic alternations and restoration is extremely challenging once function has been impaired. Due to the slow rate of accumulation of peat in fens, these ecosystems are generally considered to be irreplaceable. We recommend that the Final EIS include a description and acreage of fens within the project area and whether they would be impacted by project activities. (7-9) If none exist, then we recommend that be noted in the Final EIS. Additionally, in accordance with the goal of no overall net loss of the nation's remaining wetland base for the Section 404 regulatory program, we strongly recommend that both direct and indirect impacts to these highly valued resources be avoided.	isolated wetlands in addition to the stream buffers. HLCNF hydrologists will consult with timber and fuels implementation crews prior to and throughout implementation to ensure that any unmapped isolated wetlands are appropriately buffered. (7-9) The wetland surveys conducted for the project area did not distinguish fens, although HLCNF agrees that they may exist in the area and acknowledges the highly sensitive and irreplaceable nature of these ecosystems. The design features for isolated wetlands and riparian areas will encompass any fens where present, in addition to other wetland types.
Water Quality: The Draft EIS includes descriptions of the Ontario Creek, Telegraph Creek, Mike Renig Gulch, and Little Blackfoot River-Hat Creek watersheds and discloses existing water quality conditions based on the 2012 State of Montana CWA Section 303(d) list. The Draft EIS states that numerous streams reaches are not meeting identified beneficial uses due to various impairments including metals, sedimentation/siltation, and alteration in streamside vegetative cover. Sources of these impairments include abandoned mine lands, grazing and forest roads. The Draft EIS states that potential project impacts, such as increased sediment delivery to streams or wetlands, alteration of streambanks, and increased stream temperatures due to removal of streamside vegetation cover, will be minimized or eliminated based on implementation of project design features and BMPs, siting roads in upland areas away from streams, and road improvements to reduce/eliminate sites that allow sediment delivery to streams or wetlands and improve drainage. These measures will ensure that any sediment transport or increases in stream temperature will be negligible. Recommendations: We recommend that the USFS analyze potential impacts to impaired waterbodies within and downstream of the planning area, including waterbodies listed on the most recent EPA- approved CWA Section 303(d) list, which in this case is 2014. (7-10) The 2012 data utilized in the Draft EIS are outdated and will need to be updated to the 2014 MDEQ CWA 303(d) list for the Final EIS. We further recommend that the Final EIS include a map of the impaired waterbody segments within, or downstream of, the project area. (7-11) Such a map is necessary to understand the relative proximity of treatment units and temporary roads to impaired waters and the likelihood of project activities contributing to or disturbing identified sources. One option to address this recommendation may be to revise Figures E-4 and E-5 to include this information. Once the analysis is updated to include the 2014 MDEQ CWA 303(d) list, we recommend that the USFS coordinate with MDEQ if there are identified potential impacts to impaired waterbodies (7-12) (in order to avoid causing or contributing to the	(7-10) The Hydrologist specialist report includes an analysis of sedimentation from roads and treatment units to all project-area streams, including those on the 2014 CWA Section 303(d) list for sediment. Metals impairment is discussed more briefly, as project activities are not anticipated to impact metals loading. (7-11) A map has been added to the FEIS showing the impaired stream segments along with treatment units and roads, as well as the 6th order HUC watershed boundaries. (7-12) The HLCNF acknowledges the need to consult with MDEQ regarding any potential impacts to impaired waterbodies to avoid exceeding water quality standards. Comments from MDEQ have been received

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exceedance of water quality standards). Where a TMDL exists for impaired waters in the area of potential impacts, pollutant loads should comply with the TMDL allocations for point and nonpoint sources. Where new loads or changes in the relationships between point and nonpoint source loads are created, we recommend that the USFS work with MDEQ to revise TMDL documents and develop new allocation scenarios that ensure attainment of water quality standards.(7-13) Where TMDL analyses for impaired waterbodies within or downstream of the planning area still need to be developed, we recommend that proposed activities in the drainages of CWA impaired or threatened waterbodies be either carefully managed to prevent any worsening of the impairment or avoided altogether where such impacts cannot be prevented. In addition, if the Mike Renig Gulch watershed does not contain any impaired waterbodies, then we recommend it be noted in the Final EIS. (7-14)	and responded to, and coordination will be ongoing. (7-13) The HLCNF acknowledges the need to move toward compliance with existing TMDL allocations or work with MDEQ to develop new allocation scenarios to ensure compliance with water quality standards. Coordination with the MDEQ will be ongoing. (7-14) TMDLs for streams in the project area were established by the Little Blackfoot Watershed TMDL report, which was released in 2011 and updated in 2014. The Hydrology specialist report has been updated to clearly state that the Mike Renig Gulch watershed does not contain any waterbodies listed as impaired by MDEQ
<u>Soil Disturbance:</u> We appreciate the Draft EIS detailed analysis of soil resources, including predictions of detrimental soil disturbance (DSD), particularly given the connection to potential water quality impacts that may result from accelerated surface erosion and sediment delivery. Starting on p. 586, Table 230 identifies acres of new DSD based on proposed vegetation treatment acreage. Several treatment units are predicted to exceed the USFS Region 1 Soil Quality Standard (SQS), which states that new vegetation management activities should not result in detrimental soil conditions on more than 15% of an activity area. To ensure compliance with the SQS, the USFS plans to require design features and BMPs. Recommendations: The EPA recommends that the Final EIS include a summary table of the required design features and BMPs, in this case specific to soil resources protection. (7-15) This information is particularly important given the predicted exceedance of the Region 1 SQS in several treatment units. If the USFS has not already done so, we also recommend requiring a minimum 100 foot setback from slopes greater than 30% to minimize soil disturbance. (7-16) Impacts from Proposed Roads: We appreciate that Figures E-4 and E-5 include the project area road network including segments proposed for maintenance, reconstruction, temporary construction/obliteration, haul routes, and decommissioning. The Hydrology section of the Draft EIS notes that the design criteria that will apply for activities in or near wetlands are described in the Soil Specialist Report. The Hydrology section also acknowledges that both action alternatives propose a new temporary road (NOI) with a channel crossing that would require approval from the State of Montana as well as the Corps for a CWA Section 404 permit. In addition, the Inventoried Roadless Areas section of the Draft EIS notes that prescribed fire is the only type of treatment proposed within the Jericho Mountain IRA. Recommendations: Discharge of dredged or fill material into waters of the United States, including wetlands, is regulated	(7-15) Design features were developed by each resource area for the DEIS and updated in the FEIS to reduce the potential for these resource effects. Chapter 2 of the FEIS and Appendix C of the draft Record of Decision describe these design Features. (DROD). (7-16) Currently mechanized harvest is limited to slopes with less than 35% gradient, with the exception of short, isolated areas. The reason being to reduce potential erosion and compaction. The R1 SQS specify that "soil quality is maintained when erosion, compaction, displacement, rutting, burning, and loss of organic matter are maintained within defined soil quality standards. Activities are designed to not create detrimental soil disturbance (DSD) on more than 15% of an activity area. In areas where less than 15% detrimental soil conditions exist from prior activities, the cumulative detrimental effect of the current activity following project implementation and restoration must not exceed 15%." Hence whether a 100 foot setback is in place from slopes greater than 30% gradient or not, the DSD may not exceed 15%, and below this 15% standard, soil quality is maintained according to R1 standards. Also, please see the Hydrologist specialist report for information regarding WEPP modeling and sediment inputs into streams from treatment activities. (7-17) The HLCNF acknowledges the need to consult with the US Army Corps of Engineers to determine if any project activities will require a CWA Section 404 permit.

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under CWA Section 404. This permit program is administered jointly by the Corps and the EPA. Please consult with the Corps to determine the applicability of CWA Section 404 permit requirements to wetlands that would be impacted in the project area. (7-17) It is unclear if indirect impacts to supporting wetlands hydrology resulting from road cuts and fills were assessed, (7-18) or if project design criteria would address these impacts. We recommend avoiding impacts to aquatic resources that are considered "difficult to replace" under the EPA's and the Corps' Final Rule for Mitigation for Losses of Aquatic Resources (7-19) (33 CFR Parts 325 and 332; 40 CFR Part 230 (73 FR 19594, April 10, 2008)]. The rule emphasizes the need to avoid and minimize impacts to these "difficult-to-replace" resources and requires that any compensation be provided by in-kind preservation, rehabilitation, or enhancement to the extent practicable. We recommend restoration plans require that soil profiles and hydrology are re-established as much as possible to the original state. (7-20) In addition, the EPA recommends the USFS consider Executive Order 11990 Protection of Wetlands, which requires that each agency provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for "managing federal lands." In addition, the Draft EIS refers the reader to the project file for various specialists' reports that describe the design criteria and restrictions that will be implemented to minimize or eliminate impacts from roads to water resources, including wetlands/riparian areas. We recommend that the Final EIS include a summary table of these measures. It appears that the USFS is taking every step to ensure such protections, but it is very difficult to determine the adequacy of required measures without a summary compilation. If the USFS has not already done so, the EPA recommends considering protection of aquatic resources from road-related impacts by implementing the following measures: • Locate roads away from streams and riparian areas where possible; • Locate roads away from steep slopes, landslide prone areas, and erosive soils; • Minimize the number of road stream crossings; • Construct unavoidable road stream crossings during periods of low flow to avoid fish spawning and incubation periods, and/or dewater relevant stream segments prior to construction; • Provide adequate road drainage and erosion control to avoid routing sediment to streams; • Use bottomless or textured bottom culverts if possible; • Design roads to allow for natural drainage patterns;	(7-18) The Hydrology specialist report has been updated to clarify that road decommissioning includes removal of any culverts, the restoration of natural stream channel geometry, and full obliteration with re-contouring of the road prism along cut/fill road segments. The design features have also been expanded to include additional guidance on BMPs required during road maintenance and construction. These updated design features will be included in Chapter 2 of the FEIS. (7-19) The HLCNF agrees with the need to avoid impacts to “difficult to replace” aquatic resources. Although existing HLCNF wetland survey data do not specifically identify fens versus other wetland types, the expanded project design features include no-ignition and no-mechanical-treatment buffers for all isolated wetlands regardless of type. The design features also include riparian buffers and BMPs to minimize impacts on connected wetlands and streams. (7-20) Restoration work in all of the action alternatives includes decommissioning of non-system roads, and obliteration of temporary roads. The design features in the Hydrology specialist report have been updated to specify that road decommissioning includes removal of any culverts and the restoration of natural stream channel geometry. These will be included in Chapter 2 of the FEIS. Design features were developed by each resource area for the DEIS and updated in the FEIS to reduce the potential for these resource effects. Chapter 2 of the FEIS and Appendix C of the draft Record of Decision (dROD) describe these design features.

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• Develop a monitoring plan and schedule to assess the effectiveness of road obliteration and/or decommissioning after project completion; and • Require prompt re-vegetation of disturbed areas and temporary roads. Monitor for five years to ensure successful re-vegetation. Lastly, we recommend that the Final EIS include a discussion regarding how the proposed prescribed fire treatment units will be accessed in the IRA. (7-21) Other Considerations <u>Documentation of the U.S. Fish and Wildlife Service's Recommendations:</u> The Draft EIS identifies the Canada lynx, an Endangered Species Act-listed threatened species, as likely to be adversely affected by the proposed project. Implementing the proposed treatments under the action alternatives would reduce snowshoe hare habitat and the quality of lynx denning and foraging habitat. In addition, since lynx appear to den away from roads, the proposed temporary roads may displace lynx from otherwise available denning habitat. Alternative 2 proposes more acreage for vegetation treatments and more miles of temporary roads than contemplated under Alternative 3. We recognize that the USFS will discuss its determinations and findings with the USFWS. Documentation of the USFWS's consultation and concurrence, along with its recommendations for project design criteria, mitigation, and monitoring will be a valuable addition to the Final EIS. (7-22) <u>Preferred Alternative:</u> The Draft EIS does not identify the USFS's Preferred Alternative. As required under Section 1502.14 of the Council on Environmental Quality's Regulations for Implementing the National Environmental Policy Act, the Preferred Alternative will need to be identified in the Final EIS unless another law prohibits expression of such a preference. It seems reasonable and judicious to include such an analysis in the Final EIS to ensure that the public and interested stakeholders have an opportunity to comment on the Preferred Alternative during the Final EIS review rather than waiting for the USFS objection period. We recommend that the USFS's Preferred Alternative is clearly described in the Final EIS, (7-23) or an explanation be provided as to why it is not identified. <u>Closing</u> Consistent with Section 309 of the CAA, it is the EPA's responsibility to provide an independent review and evaluation of the potential environmental impacts of this project. Based on the procedures the EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed project, the EPA is rating the Draft EIS as Environmental Concerns - Insufficient Information (EC-2). (7-24) The "EC" rating indicates that the EPA review has identified environmental impacts that need to be avoided in order to fully protect the environment. The "2" rating indicates that the EPA has identified additional information, data, analyses, or discussion that we recommend for inclusion in the Final EIS. Because a Preferred Alternative was not identified in the Draft EIS, each of the action alternatives are receiving an EC-2 rating	(7-21) Prescribed fire treatment units will be accessed by motorized equipment using existing travel routes. When off road travel is necessary, it will be done by either hiking or helicopter. If system or temporary roads were to be decommissioned (i.e. re-contoured or otherwise not drivable) prior to prescribe burning access would then be limited to hiking or helicopter. (7-22) Project-specific consultation with the United States Fish and Wildlife Service is ongoing and will be completed prior to issuance of a ROD on the Telegraph Vegetation Project. The design features, BMP's, mitigation and monitoring plan recommendations will be included in the analysis for the FEIS and incorporated into the dROD.

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(we do not rate the no action alternative). A description of the EPA's rating system can be found at: http://www2.epa.gov/nepa/environmental-impact-statement-rating-system-criteria. Although the action alternatives received an EC-2 rating in this review, we do not view them as equivalent based on the Draft EIS analysis. As outlined above, due to decreased treatment acreage, fewer miles of new temporary roads, more miles of decommissioned roads, and more stream crossing improvements, Alternative 3 would have reduced impacts to water resources when compared to Alternative 2. We appreciate the opportunity to participate in the review of this project, and are committed to working with you as you prepare the Final EIS. If we may provide further explanation of our comments during this stage of your planning process, please contact me at 303-312-6704, or your staff may contact Amy Platt, at 303-312-6449 or platt.amy@epa.gov.	(7-23) The preferred alternative will be identified in the FEIS. (7-24) EPA's review of the DEIS did not include the hydrology specialist report, which includes supporting documentation for the information in question. This report has been made available to EPA, and in keeping with EPA standard procedures, they will provide updated comments once the final EIS is released.

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Please read and consider my comments on the proposed Telegraph timber sale below. I have included attachments that contain quotes by hundreds of Ph.D. experts who understand the types of human actions in the forest that disrupt and sometimes destroy the proper functioning of important natural resources there. Your proposed timber sale does just that. Please allow their wisdom to guide your national forest management. Caring, capable, professional forest managers who read the conclusions and predictions of these experts, then compare them with the biased, skewed IDT effects disclosures usually modify their project accordingly to eliminate the likely resource damage. This includes "short-term" damage your IDT is so fond of accepting. They fail to understand that the American people abhor amenity resource damage caused by agency proposals to provide corporate profit opportunities. Finally, your Purpose & Need goals stated on pages 5 and 6 are either 1) unnecessary, 2) will not be achieved by this timber sale, or 3) important goals that will best be achieved by actions that are consciously omitted in your alternatives**. (8-1**) You know this and your IDT members know this. Why can't you understand the USFS trickery used to garner public favor of their corporate-friendly timber sales isn't a secret...especially to retired agency employees. Competent IDT members include only goals in their P&N statements. This is what the NEPA requires. This IDT includes goals and then inappropriately follows the goals with the way they intend to accomplish the goal. Doing this eliminates alternative ways to achieve the goal. It's time to start this DEIS over with people who are capable of writing a NEPA document. Here, see for yourself: • "Develop forest conditions across the landscape by improving resiliency to disturbances such as to insects, disease, fire, and drought" **Comment:** Your P&N indicates this sale will • "Enhance species, age class diversity and density to provide opportunity for future diversification thus helping the landscape to be more resilient." **Comment:** Your P&N indicates this sale will • "Manage previously harvested stands to ensure vigorous growth and high resilience."	**(8-1)** This comment generally opposes the purpose and need for the project without providing any rationale as to why and comes across positional in nature and therefore does not warrant any further agency response. However, responses to other comments pertaining to the project's purpose and need are provided below**.**

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John Muir August 1897 "Because we don't think about future generations, they will never forget us." **Henrik Tikkanen** "Let us a little permit Nature to take her own way; she better understands her own affairs than we." **Michel de Montaigne** "We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect." **Aldo Leopold, from A Sand County Almanac** "The tree which moves some to tears of joy is in the eyes of others, only a green thing which stands in their way." **William Blake** "We must protect the forests for our children, grandchildren and children yet to be born. We must protect the forests for those who can't speak for themselves such as the birds, animals, fish and trees." **Chief Edward Moody** Ansel Adams had the US Forest Service in mind when he said this: "It is horrifying that we have to fight our own government to save the environment." Supervisor Avey, the proposed Telegraph timber sale shows John Muir had exquisite abilities to predict the future 117 years ago. This tragic project shows that since the national forests were created, agency decision-makers like you still refuses to respect/admire Nature's qualities. Nature must never be manipulated and/or desecrated by humans for money as you propose to do. Nature's bounty is priceless to most Americans who pay your salary. They trust you to care for and protect the wildlife, scenery and clean water. It should not be about money.	
Please re-examine your Purpose & Need. **(8-2)** It comes straight from the USFS playbook. With a few minor changes your past NEPA documents contain the same P&N. It describes the actions that must occur to change a properly functioning, biodiverse forested landscape into an area that resembles a private industrial tree farm. As a retired USFS employee I know we were both showered with information intended to teach us timber is king and it's our job to "manage" and "treat" (a.k.a. commercially log) the national forests.	**(8-2)** This comment generally opposes the purpose and need for the project without providing any rationale as to why and comes across positional in nature and therefore does not warrant any further agency response. However, responses to other comments pertaining the project's purpose and need are provided below.

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Natural resource damage is considered necessary and acceptable collateral damage. Think about it.	
Have you ever wonder why they don't require you to submit detailed project plans with cost estimates for timber sales you'd like to complete each FY where logging would enhance the ecosystem function before they allocate the timber money? As it stands now, you get timber money and then find areas to log . . . whether it needs it or not. Of course when this happens you use the agency's one-size-fits-all Purpose & Need statement. Were your environmental values the same when you started working for the agency as they are now? How bout the IDT members who prepared this DEIS pre-decisional EA? I invite you to purchase and read Jim Furnish's new book published early in 2015. It's called Toward a Natural Forest-the Forest Service in Transition-A Memoir. Please make it available to your employees. Your IDT members who enthusiastically join you and assist you in y6ur timber sale plunder might also question their own behavior after reading Mr. Furnish's book. Indeed, Mr. Furnish knows the USFS well: 1968-1976 -forester on the Black Hills NF 1977-1984 - District Ranger on the Bighorn NF 1984-1989 - planning staff on the San Juan NF 1989-1991 - appeals coordinator in the WO 1991-1999 -forest Supervisor on the Siuslaw NF 1999-2002 - Deputy Chief of the USFS in the WO Here are several quotes from his book: "A different set of societal values emerged, inviting the agency to change. The failure to respond to this value shift had profound consequences for the Forest Service. How many polls that show 90 percent of people hate clear-cuts does one have to read before concluding that its time to do something different?" (pages 134 and 135) "The timber industry, as well as many people in Forest Service leadership, continued to view roadless area protection antithetical of multiple use mandates." (page 151) "Historical evidence strongly suggests that once the Forest Service left the custodial era and shifted gears to embrace the priority of aggressive timber harvesting, it never looked back." (page 188) "What I'm objecting to is the notion that maximum consumption. Clearcutting old-growth forests provided the greatest volume and value and returned the highest profit. But the maximizing of consumption put too great a stress on natural systems, and they crashed. Natural forests became	

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tree farms, salmon populations plummeted because these forests were their womb, and all manner of old growth-dependent wildlife suffered." (page 195)	
"The problem now is that the Forest Service's intentions for the next century and beyond are unclear. They need to be made clear if the agency is to excel. The first thing the Forest Service leaders need to say - loudly, to internal and external audiences - is that both public sentiment and science have shown that former management principles for our national forests are no longer valid. We tried the "timber is king" approach and it failed. Restoration will be necessary and will be an important priority. This can be done without repudiating former leaders and their motives. Next, the agency's leaders need to explicitly embrace the mandate of ecosystem management, which I would describe as value-driven resource management with a goal of maintaining or achieving naturalness. Primary values should be clean water and air, abundant fish and wildlife, quality recreation opportunities and sustaining landscape function." (page 198) "I'd become increasingly disenchanted with a Forest Service - my Forest Service - that seemed far too beholden to industry interests. My early heroes met challenges head-on, but they got stuck in a rut when they failed to recognize that society's values had shifted, that the tools in their box no longer worked." (page 199) His book can be summed-up in the last paragraph on page 200: "The finest tradition of American excellence calls for us to initiate change when conditions warrant and then take bold action. The world waits for leaders to step out, without apology to create a different future; create hope again, and again, and again.. To the Forest Service I served and loved and had to leave, I implore you: Do it now."	
I suggest all USFS employees who wish to learn the truth about the agency have the courage to buy Mr. Furnish's book at: http://www.towardanaturalforest.com/ Here's a review of the book: http://fseee.org/index.php/ground-truth/dispatch/1004172-review-qtoward-a-natural-forest **Comment:** Indeed, the environmental carnage that will be caused by the proposed Telegraph timber sale is major. The statements by hundreds of Ph.D. scientists quoted in the Opposing Views	Literature Review **(LR-1)** – Furnish: This book is an opinion piece of a former Forest Service employee detailing his thoughts and observations on perceived paradigm shifts within natural resource management and compares these shifts to current agency natural resource management trends.

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Attachments describe the resource destruction that will occur as a result of timber sales such as this one. **Comment:** Pope Francis' recent encyclical describes USFS management perfectly: "This sister now cries out to us because of the harm we have inflicted on her by our irresponsible use and abuse of the goods with which God has endowed her. We have come to see ourselves as her lords and masters, entitled to plunder her at will." **Comment:** Does the USFS still place timber sales in 2 categories . . . timber purpose and resource improvement purpose? Most timber sales were timber purpose. The goal (which was never reflected in the P&N) was to provide short-term corporate profit opportunities.	
I hope the IDT members read **Opposing Views Attachment #1 and #4**.with interest and curiosity. The well-respected scientists who authored the statements in these 2 documents describe scores of natural resources that will be ravaged by logging and roading activities that occur anywhere at anytime. Most IDT members know this, yet they look the other way as they do their part to convert "priceless" trees owned by 322 million Americans into short-term corporate profit. Please have the courage to dwell on this a while. Supervisor Avey, I am confident that you will not modify your DEIS to correct the IDT's ethical negligence and legal violations you are about to discover when reading these comments for 2 reasons: 1) You know after my objection is rejected I don't have the money to deal with OGC attorneys in court, and 2) after reading my comments you will realize the only action that will eliminate all legal violations is to withdraw your beloved timber sale. I do intend to use the court of public opinion at a later date. It's often more effective to use the media to convince the public that the USFS proposes to harm their land for corporate gain than it is to fight OGG attorneys in a court of law. I still remember when other resource specialists weren't 'afraid to write' the truth. Their effects disclosures would not pull punches if they thought implementing the Proposed Action would impair, harm or in some cases destroy the resource the public pays them to protect. Unfortunately, this is not the case here. Some IDT members should hang their head in shame and never again entertain the notion that they are "public servants."	A review of literature presented in the commenter's Attachments #1 and #4 are responded to below.

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Issue #1 -- Logging road construction causes Significant ecological harm. Please analyze an action alternative in detail that does not construct any new roads (temporary or system). (8-3) **Such an alternative is "reasonable" and will "minimize adverse effects of these actions upon the quality of the human environment." 40 CFR 1500.2(e)** Sadly, a connected action to the timber harvest in the Proposed Action is to construct 8.5 miles of new road. There is enough drive-able road on national forest land to reach the moon and halfway back yet you want more! A no road construction and reconstruction alternative **(8-3)** will likely reduce the sale volume some. However, it stands out among the possible action alternatives that should be analyzed in detail because it reduces the adverse environmental effects of logging while still meeting the purpose and need for the project. Sadly, your IDT rejected this alternative to maximize volume. Who are these IDT members? **Comment:** Please don't tell me you will not analyze a "no new road" alternative in detail because the P&N will not be met. The P&N does not specify a certain number of treatment acres. The "no new roads" alternative will reduce the acres logged, but will still meet the P&N. You know this. **Comment:** Without exception, road construction and reconstruction are activities that cause damage to some important natural resources in the forest. New road construction is particularly detrimental to aquatic and wildlife resources. Chief Dombeck's statement below supports this fact. "*Roads often cause serious ecological impacts. There are few more irreparable marks we can leave on the land than to build a road.*" Dr. Mike Dombeck, Chief, US Forest Service Remarks to Forest Service employees and retirees at the University of Montana February 1998 Link to statement: https://www.uwsp.edu/cnr/gem/Dombeck/MDSpeeches/CD%20COPY/Chief%20Mike%20Dombeck%27s%20Remarks%20to%20Forest%20Service%20Employees%20and%20.htm **Opposing Views Attachment #4** contains statements by hundreds of Ph.D. scientists describing Chief Dombeck's observations in greater detail. **Comment:** Since best science and Dr. Dombeck agree that there are few more irreparable marks we	**(8-3)** A no road alternative is analyzed in the no action alternative. All proposed road construction would be temporary and only be used to facilitate harvest and post burning activities. All temporary roads would be decommissioned within 5 years after harvest activity is complete.

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can leave on the land than to build and reconstruct road, this is a valid reason to analyze this alternative in detail. Here's information about NEPA alternatives that comes from the experts: **"Summarize, as relevant, information from scoping (Step 4 above)**. In this summary, highlight decisions your team made regarding possible alternatives and potential mitigations that link to different alternatives. This information should further prove that your team was open to different alternatives, especially any that the public suggested."	
"Remember not to be silent about the reasons for considering some alternatives and ignoring others. Silence is a gift to a possible plaintiff. So plan for and provide even a brief rationale about your range of alternatives. Such a discussion is especially important if your EA or EIS includes only a single action alternative. A single action alternative is a risky agency choice; especially if you determine that your EA or EIS is likely to be a high-risk and controversial document." **Range of Reasonable Alternatives** Feature Article, November 2009 by Larry Freeman, PhD The Shipley Group, Senior Consultant Link: http://www.shipleygroup.com/news/articles/0911.pdf **Comment:** Supervisor Avey, you ignore Shipley Group NEPA recommendations. Doesn't the USFS spend millions of dollars to hire this company to teach agency employees how apply the NEPA process correctly? Are your qualifications comparable to Dr. Freeman who works for the Shipley Group? They must be for you to ignore Dr. Freeman. **Comment:** The Administrative Procedures Act directs judges to set aside an agency action if the court determines that the action is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A). A line-officer who ignores best-science and instead makes a Decision on weak, meager evidence provided by people with financial interest in a sale being sold is guilty of violating the APA. You have done this. **Comment:** Please don't claim the No Action alternative satisfies this request. The timber sale contains some actions that will benefit the ecosystem of the area and the P&N will be met because volume will be available from existing roads. A no new roads action alternative is reasonable. It allows the ecosystem benefit actions,	

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it produces volume and reduces fuels, and eliminates the ecosystem damage caused by roads that is identified in Opposing Views Attachment #4. **Request for changes to be made to the final NEPA document:** Analyze a no road construction (including temp roads) **action** alternative in detail. This would satisfy the P&N. Just as with No Action, this alternative provides the public with the trade-off between the Proposed Action and an alternative with less volume and less environmental impact . . . especially to aquatic resources.	
Issue #2 - Some IDT members claim No Action will result in the increased probability of severe wildfires. This is inconsistent with the "best science" quoted below. Indeed, for decades USFS leaders have promised the public that agency projects will be based on "best science." Clearly this is not the case on the Helena National Forest. I spent 19 years of my 31 year USFS career as the forest planner for the Nez Perce National Forest in north Idaho. I was also the NEPA coordinator. I reviewed EAs and EISs prepared on the forest for legal compliance and served as IDT leader and writer/editor for projects that would affect the entire forest. I have never read such untrue environmental effects disclosures written by IDT members supposedly charged with protecting the forest for future generations to enjoy. It's clear that several members of the IDT are frightened of you Supervisor Avey. They know they will be punished if they don't portray the No Action alternative as a tragic mistake that will decimate, ravage and annihilate the natural resources and recreation opportunities in the sale area. They will say anything. The USFS has taught them that logging reduces fire severity and rate of spread. In light of the best science written by hundreds of nationally recognized scientists with no ties to the USDA that are quoted in the **Opposing Views Attachments**, the USFS still teaches these lies and the IDT members believe the lies even though they have doubts. Where were the fire specialists? Either they didn't read the bungled effects disclosures in Chapter 3 predicting a catastrophic fire if it's not logged **(8-4)** or they are fire-clueless.	**(8-4)** The Fire and Fuels section of the FEIS does not make a prediction that there would be catastrophic fire if the project area is not logged. Predicting future fire starts is impossible.
I invite all IDT members to examine real (emphasis added) science explaining how logged over areas interact with fire. **Opposing Views Attachment #3** contains 61 more similar conclusions by well-respected scientists not affiliated with the USDA. Some even demonstrate how logging exacerbates fire behavior. Intelligent USFS employees know the agency skews its so-called fire science to show	A review of literature presented in the commenter's Attachments #3 is responded to below.

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logging reduces fire. Of course they keep this to themselves so as not to jeopardize their jobs. Here's an explanation.	
Comment: Bush appointed timber industry lobbyist Mark Rey to Under Secretary of Agriculture. This put him in charge of the USFS. Rey was sworn in by Agriculture Secretary Ann Veneman on October 2, 2001. Rey's appointment was a calculated move. Rey knew his job was to invent more excuses to commercially log our national forests. Surprise! Rey did his job well. He played on the public's fear of fire after the 2000 and 2002 fires. He knew they would accept anything ... even the ineffective fuels logging. Now the USFS routinely offers timber sales to reduce hazardous fuels. Prior to 2003 the USFS had no timber sales with hazardous fuels removal in the P&N. Mark Rey's March 3, 2003 testimony to the United States House of Representatives Committee on Resources about the Threat of Wildland Fire to the Environment and Communities can be read at: http://www.wildlandfire.com/docs/2003_n_before/rev_testimony_2003.htm The following documents authored by independent scientists not connected to the USDA debunk Rey's fuels logging policy. The IDT members refuse to accept and acknowledge this science. **Commercial Logging Causes Forest Fires** Published in *FOREST CONSERVATION NEWS TODAY*, July 20, 2002 OVERVIEW & COMMENTARY by Forest.org Link: http://forests.org/archived_site/today/recent/2002/grgruge.htm Excerpts: "*It is well known scientifically that "commercial logging actually increases fire severity by removing large, fire resistant trees and leaving behind very small trees and flammable "slash debris"—branches, twigs, and needles from felled trees. The removal of mature trees also decreases the forest canopy, creating hotter, drier conditions on the ground. The additional sun exposure encourages the growth of flammable brush and weeds. Reduction of flammable underbrush can reduce fire severity, and environmental groups have encouraged such projects. However, the Bush administration has grossly misused the funds that Congress appropriated for brush reduction near homes. In Sierra Nevada national forests last year, more than 90% of these funds were instead earmarked for preparation of large timber sales focused on the*	**(LR-2)** **Commercial Logging Causes Forest Fires** The cited article is 14-year old commentary opposed to the then-Bush administration's support for fuels reduction under the National Fire Plan. This article was reviewed in relation to the Telegraph Vegetation project. Since 2001, forest conditions have been altered due the mortality caused by mountain pine beetle.

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removal of mature and old-growth trees miles from the nearest town." "*The Forest Service, Bush administration and anti-environmental members of Congress are spreading a great deal of misinformation about wildfire, hoping to capitalize on public fire hysteria and minimize public opposition to increased logging and roadbuilding in our national forests, "said Jake Kreilick of the National Forest Protection Alliance based in Missoula, Montana. "With virtually all new timber sales couched in terms of 'reducing fuels' or 'restoring forest health, 'fire hysteria has emerged as the driving force behind the Forest Service's logging program and the administration's efforts to 'streamline' our nation's environmental laws," Kreilick said.*"	
Fight Fire With Logging? **Forestry experts have long known that commercial logging increases the risk of forest fires. So why, critics are asking, does the Bush administration's new fire prevention plan ignore that fact?** By Dan Okoand Ilan Kayatsky Published by Mother Jones magazine, Wed Jul. 31, 2002 Link: http://www.motherjones.com/politics/2002/08/fight-fire-logging Excerpts: "*Still, forestry experts warned in the 2000 plan that logging should be used carefully and rarely; in fact, the original draft states plainly that the "removal of large merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk.*" *Now, critics charge that the Bush administration is ignoring that warning. Neil Lawrence, a policy analyst with the Natural Resources Defense Council, claims that Washington has taken a far more aggressive approach to incorporating commercials logging in its wildfire prevention plans. As a result, Lawrence and other critics say, the National Fire Plan is becoming a feeding ground for logging companies. Moreover, critics claim the administration's strategy, far from protecting the lives and homes of those most at risk, could actually increase the likelihood of wildfires."* *"The plan consists mostly of complaining about forest fires and ginning up more money for logging," Lawrence says."*	**(LR-3)** **Fight Fire With Logging?** The cited article is opinion commentary that provides a critique on former President Bush's 2001 National Fire Plan. It was reviewed in relation to the Telegraph Vegetation project. The project does not claim it will prevent wildfire. Furthermore, since 2001, forest conditions have been altered due the mortality caused by mountain pine beetle. See the Fire and Fuels section in chapter 3 of this FEIS for additional information.

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A Burning Issue: Helping Logging, Hurting Forests By Dr. Chad Hanson Published on Monday, July 15, 2002 in the Los Angeles Times Link: http://www.commondreams.org/views02/0715-04.htm Excerpts: "*Scores of scientists and the federal government's own national fire plan have concluded that the removal of mature trees from forests increases the severity of forest fires. Why then would the Bush administration use the threat of fires to try to increase logging of mature and old-growth trees in our national forests?"* *That is clearly the administration's intention, as outlined in two recent memos on revising the Northwest Forest Plan and the "Sierra Nevada Framework" plan to allow logging companies increased access to ancient forests on public lands. The move is being led by Mark Rey, a former timber industry lobbyist and a President Bush appointee who oversees the Forest Service.*" "*Thus, the use of commercial logging for fire hazard reduction poses yet another paradox: Logging removes the trees that normally survive fires, leaves behind the trees that are most often killed by fire, increases flammable fuel loads, and worsens fire weather conditions.*" (pg. 5)	**(LR-4)** – The cited article is another opinion commentary that provides a critique on former President Bush's 2001 National Fire Plan. It was reviewed in relation to the Telegraph Vegetation project. The project does not claim it will prevent wildfire. Furthermore, since 2001, forest conditions have been altered due the mortality caused by mountain pine beetle. See the Fire and Fuels section in chapter 3 of this FEIS for additional information.
The wildland fires of 2002 illuminate fundamental questions about our relationship to fire By Dr. Timothy Ingalsbee Published in the Winter 2002 issue of the *The Oregon Quarterly* Link: http://www.fire-ecology.org/research/wildfire_paradox.pdf Excerpts: "*The Congressional Research Service (CRS) recently addressed the effect of logging on wildfires in an August 2000 report and found that the current wave of forest fires is not related to a decline in timber harvest on Federal lands. From a quantitative perspective, the CRS study indicates a very weak relationship between acres logged and the extent and severity of forest fires. To the contrary, in the most recent period (1980 through 1999) the data indicate that fewer acres burned in areas where logging activity was limited."* "*Qualitative analysis by CRS supports the same conclusion. The CRS stated: "Timber harvesting*	**(LR-5)** **The wildland fires of 2002 illuminate fundamental questions about our relationship to fire.** This article was reviewed in light of the Telegraph Vegetation Project. A Forest Service response has been provided in the below literature of the commenter's Attachment #3.

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removes the relatively large diameter wood that can be converted into wood products, but leaves behind the small material, especially twigs and needles. The concentration of these fine fuels on the forest floor increases the rate of spread of wildfires." *Similarly, the National Research Council found that logging and clearcutting can cause rapid regeneration of shrubs and trees that can create highly flammable fuel conditions within a few years of cutting.*"	
A Report to the President in Response to the Wildfires of 2000, September 8, 2000 By Lyle Laverty USDA Forest Service and Tim Hartzell U.S. Department of the Interior Link: http://frames.nacse.org/6000/6269.html Excerpts: "*Most of the trees that should be removed to reduce accumulated fuels are small in diameter and have little or no commercial value.*" "*Mechanically removing fuels (through commercial timber harvesting and other means) can also have adverse effects on wildlife habitat and water quality in many areas. Officials told GAO that, because of these effects, a large-scale expansion of commercial timber harvesting alone for removing materials would not be feasible. However, because the Forest Service relies on the timber program for funding many of its activities (including reducing fuels) it has often used this program to address the wildfire problem. The difficulty with such an approach, however, is that the lands with commercially valuable timber are often not those with the greatest wildlife hazards.*"	**(LR-6)** **A Report to the President in Response to the Wildfires of 2000.** This paper was reviewed in relation to the Telegraph Vegetation Project. The cited paper is a report prepared in response to, then, President Clinton's request for recommendations on how to best respond to the 2000 wildfires, reduce the impacts of the wildland fires on rural communities, and ensure sufficient firefighting resources in the future. The quotes provided by the commenter were made in response to critics of the President's proposal to protect roadless areas. These critics expressed concern that the roadless policy could increase wildfire risks. On the next page, the report supports thinning stands to reduce small-diameter trees, underbrush, and accumulated fuels. It cites a study that demonstrated fuel reduction treatments (which included thinning) were effective in mitigating fire severity. In the Telegraph Vegetation Project vegetation treatments followed by prescribed fire treatments would be used to modify fire behavior as well as meet other vegetation objectives. The natural and activity-generated slash will be treated.
Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats Published by the Government Accounting Office, GAO/RCED-99-65 Link: http://www.gao.giv/archive/1999/rc99065.pdf Excerpts: "*The notion that commercial logging can prevent wildfires has its believers and loud proponents, but this belief does not match up with scientific evidence or history of federal management practices. In fact, it is widely recognized that past commercial logging, road-building, livestock grazing and aggressive firefighting are the sources for "forest health" problems such as increased insect infestations, disease outbreaks, and severe wildfires.*" "*How can the sources of these problems also be the solution? This internal contradiction needs more than propaganda to be resolved. It is time for the timber*	**(LR-7)** **Western National Forests:** The literature citation is a report to Congress from the Government Accounting Office that recommends the development of a cohesive strategy for reducing and maintaining accumulated fuels on national forests of the interior West at acceptable levels. This was reviewed in relation to the Telegraph Vegetation Project. The quotes provided by the commenter are describing what the GAO identifies as some of the barriers to the effective action of addressing catastrophic wildfire (page 7). This literature reference is not relevant to the Telegraph Vegetation Project because it recommends a national policy for addressing wildfire and fuel conditions across the interior West, which is not within the scope of this project. The Telegraph Vegetation Project proposes various site-specific vegetation treatments including prescribed burning.

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industry and their supporters to heed facts, not fantasies, and develop forest management policies based on science, not politics."	
Commercial Logging for Wildfire Prevention: Facts Vs Fantasies By Dr. Timothy Ingalsbee Link: http://www.fire-ecology.org/citizen/logging_and_wildfires.htm Excerpt: "*Timber harvest, through its effects on forest structure, local microclimate, and fuels accumulation, has increased fire severity more than any other recent human activity.*"	**(LR-8)** **Commercial Logging for Wildfire Prevention** This article was reviewed in relationship to the Telegraph Vegetation Project. The cited article is opinion commentary. "Commercial logging" cannot prevent wildfires - the Forest Service has never said it would. To "prevent" wildfires, one would have to stop all human and natural (i.e., lightning) ignition sources. However, proposed vegetation and prescribed fire treatments would modify fire behavior. This project does not claim it would result in preventing wildfire.
Sierra Nevada Ecosystem Project: Final Report to Congress, 1996 Prepared by the USFS Pacific Southwest Research Station Link: http://pubs.usgs.gov/dds/dds-43/ Excerpts: "*Timber harvest, through its effects on forest structure, local microclimate, and fuels accumulation, has increased fire severity more than any other recent human activity*" "*Logged areas generally showed a strong association with increased rate of spread and flame length, thereby suggesting that tree harvesting could affect the potential fire behavior within landscapes. In general, rate of spread and flame length was positively correlated with the proportion of area logged in the sample watersheds.*" "*As a by-product of clearcutting, thinning, and other tree-removal activities, activity fuels create both short- and long-term fire hazards to ecosystems. The potential rate of spread and intensity of fires associated with recently cut logging residues is high.*"	**(LR-9)** **Sierra Nevada Ecosystem Project: Final Report to Congress.** This report was reviewed in relation to the Telegraph Vegetation Project and is about forest stands and fire regimes in California as well as treatment effects in this ecosystem. The comment was made by the authors specifically in context to the Sierra Nevada Mountain Range. Additionally, the fire regimes in California described in this article are substantially different from those found in the Telegraph Creek drainage. As a result, this opposing view has no relevance to the Telegraph Vegetation Project.
More Logging Won't Stop Wildfires By Dr. Chad Hanson and Dr. Dominick DellaSala Published in the New York Times on July 23, 2015 Link: http://www.nytimes.com/2015/07/23/opinion/more-logging-wont-stop-wildfires.html Excerpt: "*In the case of the Rim Fire, our research found that protected forest areas with no history of logging burned least intensely. There was a similar pattern in other large fires in recent years. Logging removes the mature, thick-barked, fire-resistant trees. The*	**(LR-10)** **More Logging Won't Stop Wildfires** This article was reviewed in relation to the Telegraph Vegetation Project. It is unsupported opinion commentary that discussed the relationship between logging and fire behavior. The article relies on research of the Rim Fire to debunk the intent of legislation that would suspend environmental laws to increase logging in our national forests in the name of fire prevention and restoration. First off, to "prevent" wildfires, one would have to stop all human and natural (i.e., lightning) ignition sources. However, proposed vegetation and prescribed fire treatments would modify fire behavior. This project does not claim it would result in preventing

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small trees planted in their place and the debris left behind by loggers act as kindling; in effect, the logged areas become combustible tree plantations that are poor wildlife habitat."	wildfire. Furthermore, a purpose of this project is to provide for firefighter safety.
Historical and current forest landscapes in eastern Oregon and Washington. Part II: Linking vegetation characteristics to potential fire behavior and related smoke production, 1995 By: Mark H. Huff; Roger D. Ottmar; Ernesto Alvarado; Robert E. Vihnanek; John F. Lehmkuhl; Paul F. Hessburg; Richard L. Everett Link: https://www.frames.gov/rcs/6000/6691.html Excerpts: "*As a by-product of clearcutting, thinning, and other tree-removal activities, activity fuels create both short- and long-term fire hazards to ecosystems. The potential rate of spread and intensity of fires associated with recently cut logging residues is high, especially the first year or two as the material decays. High fire-behavior hazards associated with the residues can extend, however, for many years depending on the tree. Even though these hazards diminish, their influence on fire behavior can linger for up to 30 years in the dry forest ecosystems of eastern Washington and Oregon.*" "*Logged areas generally showed a strong association with increased rate of spread and flame length, thereby suggesting that tree harvesting could affect the potential fire behavior within landscapes ...In general, rate of spread and flame length were positively correlated with the proportion of area logged in the sample watersheds.*"	**(LR-11)** **Historical and current forest landscapes in eastern Oregon and Washington. Part II:** **Linking vegetation characteristics to potential fire behavior and related smoke production.** This paper was reviewed in light of the Telegraph Vegetation Project. The paper referenced (Huff et al. 1995) above was an attempt to compare the potential fire behavior and smoke production of historical and current time periods for forty-nine 5,100 to 13,500 hectare watersheds. It was a landscape-level modeling exercise based upon vegetation type and timber harvest type classification from aerial photo interpretation of historic (1938-1959) and current (1985-1992) aerial photos. The authors used fuel behavior photo series to assign fuel loading by vegetation type for non-harvested areas and by harvest-type in harvested areas. Due to lack of site-specific information, they assigned a fire behavior photo series that matched older logging slash to the harvests, assuming in the process that no post-treatment fuels reduction treatments had ever taken place. They also only modeled surface and moderate- to low-intensity understory fires and constant weather and topographic conditions. This study has little relevance to the Telegraph Vegetation Project that proposes various vegetation treatments followed by prescribed burning to reduce natural and activity-generated fuels. The fuels and fire behavior conditions created by the project will differ greatly than that modeled by Huff et al. (1995).
Fire hazard from precommercial thinning of ponderosa pine. Research Paper (PNW-RP-057), 1968 By: G.R. Fahnestock Link: https://www.frames.gov/rcs/11000/11147.html Excerpt: "*It appears significant that many large fires in the western United States have burned almost exclusively in slash. Some of these fires have stopped when they reached uncut timber; none has come to attention that started in green timber and stopped when it reached a slash area.*"	**Fire hazard from precommercial thinning of ponderosa pine. Research Paper (PNW-RP-057)** The paper was reviewed in relation to the Telegraph Vegetation Project. It discusses slash left on the ground following precommercial thinning activities in ponderosa pine stand and the effect on fire behavior plus other effects. The fuels report (see the fire and fuels section in chapter 3 of the FEIS) acknowledges that fuel loadings increase in the short term following precommercial thinning, and shows greater rates of spread. Implementation of precommercial thinning units would be coordinated annually with fire management personnel to determine timing and number of acres treated intended to address any potential fire concern.
Testimony to the Agriculture, Nutrition and Forestry Committee United State Senate. Hearing to Review Healthy Forests Restoration Act, HR 1904 June 26, 2003	**(LR-12)** **Testimony to the Agriculture, Nutrition and Forestry Committee United State Senate. Hearing to Review**

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By:, Arthur Partridge Ph.D., Professor Emeritus, University of Idaho Link: http://www.univision.co.za/offer-day-oA2A392Cr1N382x_2F2du3g3-music.shtml Excerpt: "*The current focus on 'fuels' is, in itself, misguided because almost anything in a forest will burn, given the right conditions. Any fire specialist will tell you that the principal factors affecting fire are temperature and moisture, not fuels. No legislation will prevent or even reduce fires in the vast areas of the national forests and to pretend so is fraudulent.*"	**Healthy Forests Restoration Act, HR 1904 June 26, 2003.** This article was reviewed in relation to the Telegraph Vegetation Project. The cited article is testimony submitted in opposition to the Healthy Forests Restoration Act. The Telegraph Vegetation Project is not proposed under this legislation. Please see responses to #1, #3, #4, #5, and #8 in opposing views attachment 3 below.
Study challenges views about Western forest fires, July 23, 2012 By: Scott Sonner, AP Published in the Daily World Link: http://www.thedailyworld.com/sections/newswire/northwest/study-challenges-views-about-western-forest-fires.html Excerpts: "*More highly intense fire is not occurring now than historically in dry forests," said William Baker, who teaches fire ecology and landscape ecology in Laramie, Wyo., where he's been doing research more than 20 years. "These forests were much more diverse and experienced a much wider mixture of fire than we thought in the past, including substantial amounts of high-severity fire.*" " "*If he's right, he and others say it means fuel-reduction programs aimed at removing trees and shrubs in the name of easing fire threats are creating artificial conditions that likely make dry forests less resilient.*" "*Now, he believes thinning and post-fire salvage operations should be re-examined and emphasis placed on maintaining high-density stands in certain circumstances that would not threaten people or homes.*" "*We shouldn't be managing just for low-density forests," he said. "We should not be unhappy with-or perhaps even manage for-higher severity fires in the forests.*"	**(LR-13)** **Study challenges views about Western forest fires** This article was reviewed in relation to the Telegraph Vegetation Project. The cited article challenges the work of authors and contemporary forest management. The article relies on survey data across the nation that suggest forests in the mid-1800s were much denser than previously believed. It further asserts that contemporary fuel-reduction programs aimed at removing trees and shrubs to ease the threat of fire are creating more artificial conditions than what was present in the mid-1800s. What isn't mentioned in this article are forest conditions affected by the mountain pine beetle, which represents the majority of the Telegraph project area. Therefore, this article is not relevant to biophysical settings represented in the project area.
Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States (page 10) By: Dr. Jack Cohen (a USFS fire physicist) Published in Forest Ecology and Management, issue 256, 2008	**(LR-14)** **Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States**

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http://www.firewise.org/Information/Research-and-Guidance/WUI-Home-Ignition-Research/~/media/firewise/files/Pdfs/Research/CohenFuelTreatment.pdf Excerpts "*Treating fuels to reduce fire occurrence, fire size, or amount of burned area is ultimately both futile and counter-productive.*" (Pg.1999) "*Some viable fuel treatments may actually result in an increased rate of spread under many conditions (Lertzman et al., 1998; Agee et al., 2000). For example, thinning to reduce crown fire potential can result in surface litter becoming drier and more exposed to wind. It can also result in increased growth of grasses and understory shrubs which can foster a rapidly moving* surface fire." (Pg.2000)	The response to this literature review is provided below in responses to the commenter's opposing view Attachment #11.
Researcher Finds Need for more Prescribed Burning By Tom Kuglin Published in the Helena Independent Record newspaper, June 17, 2015 http://helenair.com/news/local/researcher-finds-need-for-more-prescribed-burning/article_4a58c3c3-a7bb-5905-a505-4567e8107600.html Excerpts: "*Finney presented his research on fire behavior in landscapes of varying levels of logging and prescribed burning at last week's "Fire on the Landscape" lecture series in Helena. While logging or thinning is often touted as a means to mitigate fire, he has found it does little to stop a wildfire.*" "*There's a confusion that if you do timber management you're doing fuel management -- you're not," Finney said. "We're not going to cut our way out of the problem, but there are ways to do this strategically, get the benefits and have a sustainable fire management approach.*" "*Finney found that fire "ripped through logged areas," and only units where prescribed fire was* introduced *showed effectiveness in stopping or mitigating wildfire spread.*"	**(LR-15)** **Researcher Finds Need for more Prescribed Burning** This newspaper article was reviewed in regards to the Telegraph Vegetation Project. It discusses a presentation to the public by Dr. Mark Finney. In light of Dr. Finney's recommendations and comments received from the public, alternative 4 was developed and addresses these concerns.
"Healthy Forests" and Wildfire Control: Accumulating Scientific Evidence By Dr. Thomas Power A Montana Public Radio Commentary, December 11, 2006 http://forestcouncil.org/so-called-healthy-forests-and-wildfire-control/ Excerpts:	**Healthy Forests" and Wildfire Control: Accumulating Scientific Evidence** This article was reviewed in light of the Telegraph Vegetation Project. This article follows the same line of thought as Dr. Finney's comment. Dr. Power is basically saying that any thinning needs to be followed by prescribed fire to be effective. Proposed activities in alternative 4 include vegetation treatments followed by prescribed fire to modify fire behavior.

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"*But the Bush Administration and some of the leadership of the Forest Service want to use logging techniques in places far removed from homes and communities to reduce the threat of wildfire. The basic idea is that most of our forests are far too dense. There are way too many trees per acre. This, we are told, not only makes them "unhealthy" but also reduces their productivity for wood production and makes them prone to frequent and severe wildfires that damage the forests even further. Cutting down many or most of those treesis the proposed solution.*" "*Most of the dense forests that the Bush Administration and some in the Forest Service want to thin to return them to "health" are not unhealthy at all. Forest scientists have been studying the fire histories of our forested landscapes in more and more detail to try to understand their densities and fire behaviors in the centuries before we began grazing cows, harvesting trees, and suppressing fires in them. What they are findingis that a significant part of the forest landscape regularly had very dense stands of trees that every few centuries burned in large natural conflagrations. It was only the lower elevation forests that featured park-like mixes of large, almost inflammable, trees and open grasslands.*" *"This is not a pessimistic story. It means that we need to focus our forest fire protection where our homes, communities, and lives are threatened. We do not have to spend tens of billions of dollars trying to save our forests from themselves. The forests do not need it, thank you, and those billion dollar efforts would not work anyway. If we are careful where and how we live in forests and learn to accept fire as a natural part of a healthy forested landscape, both prescribed fire and natural fires, we can both protect ourselves and enjoy the benefits of diverse natural forests.*"	
Comment: True to form, some IDT members involved in the preparation of this DEIS have chosen to play fast and loose with the truth as they portray the effects of the No Action alternative as ghastly, disgusting, and frightful. They know they will be punished if they don't give the Responsible Official reason to select the Proposed Action. How do they do it? The most popular way is to claim their resources will all burn up if the area isn't logged.**(8-5)** Never before have I read a NEPA document where the IDT members are misinformed about the relationship between fire behavior and logging "it will all burn up unless it's logged" believer.	**(8-5)** Thank you for your comment. Please see Fire and Fuels section in chapter 2 of the FEIS for Fire Behavior Fuel Models and associated predicted fire behaviors.
The 60 science quotes contained in **Opposing Views Attachment #3** clearly and unambiguously indicate the USFS's claim that timber sales create conditions that reduce fire intensity and rate of	**(8-6)** **Opposing Views Attachment #3**

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spread is an untrue fabrication to justify fuels logging. **(8-6)** **<u>Comment</u>**: A USFS employee and independent scientists (Dr. Cohen, Dr. Partridge, Dr. Hansen, Dr. Ingalsbee, Dr. Power, the GAO and others) who authored the "best science" quotes above indicate logging does not affect fire starts or intensity.**(8-6)** Two have done research that shows logging exacerbates fire behavior, yet Mr. Davidson wrote this: **Sensitive Plants** "*The fire risks would be higher under alternative 1 than alternative 2 or alternative 3 as there would more continuous fuels across the project area. The opportunity to actively enhance special habitats such as whitebark pine and aspen stands would be missed, and downward trends would continue for these species.*" (page 528) "*Large numbers of dead trees would remain in the areas otherwise proposed for treatments. Their presence would contribute to accumulating fuel loads and there would be a higher probability of a larger, higher severity wildfire with this alternative. As a potential uncontrolled future event with many possible outcomes, the effects of a higher severity wildfire are equally unpredictable for sensitive plant species*.: (page 528) Mr. Davidson must have impeccable qualifications and credentials to justify rejecting these experts' research conclusions. What are they? **<u>Comment:</u>** A USFS employee and independent scientists (Dr. Cohen, Dr. Partridge, Dr. Hansen, Dr. Ingalsbee, Dr. Power, the GAO and others) who authored the "best science" quotes above indicate logging does not affect fire starts or intensity. Two have done research that shows logging exacerbates fire behavior, yet Ms. Coleman wrote this: **Soils** "*Under the no action alternative, finer woody fuels (less than 3 inches in diameter) and needles are accumulating on the ground and will continue for several years as a result of the mountain pine beetle (MPB) mortality. These conditions greatly increase the likelihood of a wildfire ignition*." (page 582) "*In these anticipated fuel accumulations, if wildfire became established it could generate very high heat per unit area and be difficult to control. Such a high-severity wildfire would directly impact soil health and site productivity. Intense, longer duration heat near the soil surface could impact microbial activity near the soil surface and result in hydrophobic conditions, increased potential for surface runoff, soil detachment, large scale erosion, and sedimentation into waterbodies.*" (page 582)	The purpose and need for the Telegraph Vegetation Project does not include reducing the risk of fire damage to human structures. The project will use a combination of prescribed burning and mechanical treatments to achieve desired objectives. The Telegraph Vegetation Project (EIS) and resource reports in the project file disclose the effectiveness and potential environmental effects of prescribed treatments. Fuel modeling indicates prescribed treatments would effectively modify fire behavior. See the Reference section in the FEIS for a list of Best Available Science utilized to inform project analysis for each resource. This list includes literature of non-Forest Service employees. Please refer to the chapter 4 of the FEIS list of preparers for the resource specialists' qualifications.

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Ms. Coleman must have impeccable qualifications and credentials to justify rejecting these experts' research conclusions. What are they? **Comment:** A USFS employee and independent scientists (Dr. Cohen, Dr. Partridge, Dr. Hansen, Dr. Ingalsbee, Dr. Power, the GAO and others) who authored the "best science" quotes above indicate logging does not affect fire starts or intensity. Two have done research that shows logging exacerbates fire behavior, yet Mr. Callery wrote this: **Hydrology** "*However, there are potential indirect effects associated with alternative 1; the probability of high severity wildfire in the project area, with its attendant watershed effects, would be higher in this alternative than in either action alternative*." (page 611) Mr. Callery must have impeccable qualifications and credentials to justify rejecting these experts' research conclusions. What are they? **Comment:** A USFS employee and independent scientists (Dr. Cohen, Dr. Partridge, Dr. Hansen, Dr. Ingalsbee, Dr. Power, the GAO and others) who authored the "best science" quotes above indicate logging does not affect fire starts or intensity. Two have done research that shows logging exacerbates fire behavior, yet Ms. Morrissey wrote this: **Recreation** "*Alternative 1 is the no-action alternative. The direct and indirect effects of the no action alternative on the recreation resource would be caused by continuation of the MPB outbreak in the area. If alternative 1 is chosen, no vegetation treatments would occur*. *Consequently, fuel loading would continue to increase over the project area, as MPB- killed trees would continue to fall. This would create an increased fire risk under alternative 1. As described in the effects common to all section above, the continuation of the MPB epidemic would cause a loss in scenic quality that would impact some recreation opportunities in the area, such as hiking or scenic driving on forest roads. In addition, the increased risk of wildfire would be greatest under this alternative, which would have direct and indirect short and long-term effects on recreation uses in the area through loss of use in burned areas. Compared to the action alternatives, the consequence to recreation from not responding to the MPB epidemic would be negative in the long-term.*" (pages 664 and 665) Ms. Morrissey must have impeccable qualifications and credentials to justify rejecting these experts' research conclusions. What are they?	

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<u>Comment:</u> A USFS employee and independent scientists (Dr. Cohen, Dr. Partridge, Dr. Hansen, Dr. Ingalsbee, Dr. Power, the GAO and others) who authored the "best science" quotes above indicate logging does not affect fire starts or intensity. Two have done research that shows logging exacerbates fire behavior, yet Ms. Morrissey wrote this: **IRAs** If alternative 1 is chosen, no vegetation treatments would occur. Consequently, fuel loading would continue to increase over the project area, as MPS-killed trees wound continue to fall. This would create an increased fire risk. The potential event of an uncharacteristic fire could impact the naturalness and/or recreation values in the area." (page 674) Ms. Morrissey must have impeccable qualifications and credentials to justify rejecting these experts' research conclusions. What are they? **<u>Comment:</u>** A USFS employee and independent scientists (Dr. Cohen, Dr. Partridge, Dr. Hansen, Dr. Ingalsbee, Dr. Power, the GAO and others) who authored the "best science" quotes above indicate logging does not affect fire starts or intensity. Two have done research that shows logging.exacerbates fire behavior, yet Ms. Spencer wrote this: **Scenery** "*Under the no-action alternative, the crowded, overstocked conditions in portions of the project area would continue. Continuation of overstocked conditions could maintain the rapid spread of insects, causing additional mortality in the stand, heightening the risk of an intense fire. The vast stands of dead lodgepole pine detract from the scenic qualities of the landscape, as noted by Ryan. "Insect-damaged forests received negative ratings, especially when survey participants were informed beforehand of the cause of the deforestation and leaf color change (Buhyoff et al. 1979, 1982; Hollenhorst et al. 1993)" (Ryan 2005). Together, these elements would maintain the uncharacteristic vegetative mosaic across the landscape. If the vegetation is consumed by fire, or widespread insect infestations, the desired landscape character would be lost."* (page 691) Ms. Spencer must have impeccable qualifications and credentials to justify rejecting these experts' research conclusions. What are they? **<u>Comment:</u>** A USFS employee and independent scientists (Dr. Cohen, Dr. Partridge, Dr. Hansen, Dr. Ingalsbee, Dr. Power, the GAO and others) who authored the "best science" quotes above indicate logging does not affect fire starts or intensity. Two have done research that shows logging.exacerbates fire behavior, yet Mr. Nolan wrote this:	

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Cultural Resources "*Under alternative 1, no new direct effects would occur. Cultural resources would continue to be vulnerable to the effects of fuel loading within the project area, increasing the risk of wildfire. Cultural resources would continue to naturally deteriorate over time. Cultural resources would continue to be threatened by natural processes (wildfire, erosion) and simply from recreational activities that bring people in contact with cultural sites.* *Wildfires have a negative effect on fire-sensitive cultural resources due to high temperatures, an inability to control the effects, and because resource inventories cannot be conducted in advance. Fire suppression activities such as bulldozer-created control lines, hand lines, and fire retardant drops all have the potential to destroy or damage cultural resources. In addition, wildfires cause erosion through vegetation loss, resulting in resource deterioration. Vegetation loss may a/so inadvertently lead to increases in vandalism and looting of cultural sites. The high temperatures of wildfires cause rapid surface weathering of features and artifacts, accelerating loss*." (page 723) Mr. Nolan must have impeccable qualifications and credentials to justify rejecting these experts' research conclusions. What are they? **The No Action Effects Summary** Sadly. Mr Davidson, Ms. Coleman, Mr. Callery, Ms. Morrissey, Ms. Spencer and Mr. Nolan have chosen to serve the agency and not the public. In doing so they have shown they are willing to risk the proper functioning of their resource to please you. They know their watered-down, unscientific (and sometimes untrue) effects disclosures will make it easier and less controversial for you to select the Proposed Action without changes. This makes them eligible for the coveted "timber sale enabler" award. I suggest they all apply for the first TMA vacancy that becomes available. Their overriding timber volume priorities certainly qualify them for the job. It's not only pathetic but criminal that the so-called resource specialists on this IDT choose to spout the company line lies in light of the compelling evidence to the contrary. **Comment:** Supervisor Avey, are you concerned that these "it will all burn up" if its not logged effects disclosures are contrary to best science? **My Conclusion** I still remember when the USFS employed professionals with admirable land ethics and values. They were curious and sought-out new knowledge	

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from a variety of sources ... including literature not written or approved by USFS employees. In contrast, the so- called specialists who were brought in from the WO and other forests to assure this EIS would withstand the pending court actions have failed miserably. They obviously are incapable of even considering science that isn't written by USFS employees and does not parrot the company line.	
Polly wanna cracker? Avey, you spaced out the importance of on-the-ground knowledge. You shamefully abandoned your own resource specialists. Of course Schmid will reject all objections filed by the public before he reads them. Telegraph will go to court and the judge's opinion will favor the plaintiff. Then, if you want to try again by preparing a legal EIS I suggest you use an IDT composed of Helena NF employees. **Request for changes to be made to the final NEPA document**: Rewrite the Environmental Consequences Chapter such that the predicted No Action effects are consistent with best science. Omit all claims that No Action will increase the probability that future fires will occur, will spread faster and be more intense. **(8-7)** If you won't do this, then please explain why the IDT members' fire claims should trump the conclusions of many independent scientists (and a few USFS scientists) whose research shows logging intensifies and worsens the fire effects. The plaintiff's attorney will ask this question.	**(8-7)** For a list of specialists who contributed to this FEIS, please see chapter 4. You will see that numerous Helena National Forest employees are included. In regards to the request for changes to be made to the final NEPA document, we do not state that the No Action Alternative, or any action alternatives will increase the probability that future fires will occur. Predicting future fire starts is impossible.
Issue #3 -- Clearcutting the land owned by 321 million Americans directly assaults them and future generations. At page 20 the DEIS indicates 4.9 square miles will be clearcut. Survey after survey shows the public does not want their land clearcut. Here's a tiny sample: http://www.foresthistorv.org/ASPNET/Publications/region/9/historv/chap15.aspx http://www.boston.com/news/science/articles/2010/03/04/a_clear_cut_controversy/ http://www.encyclopediaofforestrv.org/index.php/The_Bitterroot_Controversy http://www.sciencedirect.com/science/article/pii/S030147970700237X http://www.bidstrup.com/publiclands.htm http://www.clearcutoregon.com/	Thank you for providing additional opposing views on forest management.

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http://www.encyclopediaofforestry.org/index.php/The_Monongahela_Controversy_and_Decision This is the legacy you will leave for my grandchildren. http://www.bing.com/images/search?q=clearcut+logging&qpvt=clearcut+logging&qpvt=clearcut+logging&FORM=IGRE http://www.clearcutoregon.com/clearcutting-in-oregon.html	
Comment: Here are videos of clearcutting. After viewing the videos do you conclude the public wants their land clearcut? Is it so important to regenerate shade intolerant conifer tree species that you feel justified by backhanding the public and rejecting the more visually acceptable shelterwood Rx? **(8-8)** http://www.bing.com/videos/search?q=clear+cutting+forests&qpvt=Clear+Cutting+Forests&FORM=VDRE	**(8-8)** Yes, in the interest of structural and species diversity and stand resilience, it is important to regenerate shade-intolerant conifer species, as well as promoting aspen stands. The videos on the site you link to do not represent what would occur in the Telegraph Project. Groups of live trees, young lodgepole pine, and trees of other species would be retained from the previous stand to maintain legacies and structural and species diversity. Due to the high level of mortality in the proposed clearcut units, no other silvicultural system is practical, there are not enough live healthy trees to leave under any other system. Please refer to the Forested Vegetation report and in the FEIS.
Comment: Responsible Officials defend clearcutting by telling the public it's needed to regenerate shade intolerant tree species. This is true. Clearcutting should be used in private-industrial tree farms. Our national forests are not tree farms even on "suitable" land. The public does not want their precious national forests used to generate corporate profit. **Comment:** The American public has been clear. They do not want their forests clearcut at any location for any reason. The majority of USFS employees were trained to be foresters. Foresters are trained to manage tree farms for the maximum revenue per acre. Foresters hired by the USFS defy the will of the public by practicing their trade on public land rather than tree farms. They reject Pinchot's words "the greatest good for the most number of people. There is no "timber famine just around the corner" in America as the USFS has been saying for many decades. **Comment:** Here are two quotes from USFS retired Deputy Chief Furnish's new book Toward a Natural Forest-the Forest Service in Transition-A Memoir: "*Fewer and fewer people accepted sweeping vistas dominated by clear-cuts and new roads. Instead, they valued naturalness, clean water, abundant fish and wildlife, and a deep sense of connection with the land. They were anguished at what the 'Forest Service was taking from the forest at the expense of future generations.*" (pages 113 and 114)	Thank you for your comment.

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"*A different set of societal values emerged, inviting the agency to change. The failure to respond to this value shift had profound consequences for the Forest Service. How many polls that show 90 of the people hate clear-cuts does one have to read before concluding that it's time to do something different?"* (pages 134 and 135) Does it serve the public to abuse their land? If you contracted with a landscaping company to work improving your property and they did exactly what you didn't want would you do? **Comment:** Supervisor Avey, you are aware of the public's dislike of clearcuts yet you continue to clearcut. Will you be proud to pockmark and disfigure the public's land with ugly visual scars? Does it make you feel powerful? How will you justify your actions when recreationists come to your office complaining about clearcuts? Don't allow the timber employees on the IDT to control your decisions. Don't capitulate and succumb to their witless quest for volume. Be a leader. Really serve the public. **Comment:** Most lay members of the public conclude clearcuts are unacceptable scars placed on the forested landscape. Apparently your IDT members believe the clearcut units on the Telegraph timber sale are different. How?	

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<u>Request for changes to be made to the final NEPA document:</u> Eliminate ALL proposed clearcut units. If you must regenerate the areas explain to the public why. Understand private industrial tree farm conditions must never be created in national forests ... even on suitable land. If you must log the units use a silvicultural RX that will not affect the visual character of the area in any way. **(8-9)**	**(8-9)** All prescription types have been explored within each proposed treatment unit. Within units proposed with a prescription of clearcut there are no other options due to the high levels of mortality. Silvicultural terminology is based on the function of the system, rather than its appearance. For example, generally even- or 2-aged regeneration harvests (clearcutting, seed-tree cutting, or shelterwood cutting) leave behind few residual trees because of high mortality, or because the tree species to be regenerated require open, sunny conditions. However, these treatments may visually appear similar to one another. For example, a clearcut with reserves may contain many residual trees that are not retained to provide seed or shelter, but rather to provide snag recruitment or diversity. Similarly, shelter and seed tree harvests retain trees to provide seed and/or shelter as required by the desired regeneration species, and may contain additional remnants for other purposes. In some cases, these may look like thinning, but because the objective is to establish new regeneration, they are regeneration harvests. Conversely, an intermediate treatment such as an improvement harvest may result in an open forest, but regeneration is not required as part of the treatment goal. **Clearcut:** A stand in which essentially all trees have been removed in one operation and may or may not have reserve trees left to retain goals other than regeneration (Helms 1998). This is proposed in lodgepole pine stands with high levels of mortality. **Leave trees or reserves** would be retained for snags and diversity, and would consist of scattered individuals or patches of other species, and in some cases lodgepole where it is mixed with other species or is healthy and vigorous. Depending on the remaining stocking, the resulting stand could be 2-aged or even-aged. Generally, at a minimum live Douglas-fir and spruce would be retained, and all whitebark pine where present. Lodgepole pine, Douglas-fir, Engelmann spruce, and/or whitebark pine natural regeneration is expected depending on the unit.
Issue #4 - The pre-decisional EA indicates there will be seedtree prescriptions associated with the proposed action. You prescribe seed tree as a way to regenerate these forested areas. You fail to include the information required by NFMA: **<u>Request for changes to be made to the final NEPA document:</u>** •provide data and text demonstrating that soil, slope, or other watershed conditions will not be irreversibly damaged by seedtree silvicultural prescriptions**.(8-10)**	(**8-10)** Potential impacts of harvest activities are described in the Soils and Hydrology Specialist reports as well as in chapter 3 of the FEIS.

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•provide data and text demonstrating that seedtree silvicultural prescriptions are appropriate to meet the objectives and requirements of the relevant land management plan. **(8-11)**	**(8-11)** Walk-through stand diagnoses were performed on potential treatment units by qualified silviculturists assessing stand conditions and reviewing options for treatment (including no treatment), and outlining the best options for achieving stand objectives. This information and data is filed in the project record.
Issue #5 -- The DEIS does not discuss how the timber sale's logging and slash/RX burning activities will be mitigated to assure protected bird species' individuals and their habitat are not harmed in any way. It is not only possible but highly likely that that logging and slash/RX burning will: harm the birds with logging-related pollution, detrimentally alter the bird's habitat, environmentally degrade the area surrounding the bird's habitat, and kill bird chicks by destroying their nests or eggs. **Request for changes to be made to the final NEPA document:** Identify the birds that exist in and near the project area that are protected under the Migratory Bird Treaty Act and discuss how these birds will be protected during burning and timber harvest operations. **(8-12)** The Act makes no allowance to consciously harm these birds for any reason.	**(8-12)** (The *Migratory Landbirds and Shorebirds* section in the DEIS and FEIS identifies (1) birds of conservation concern according to the U.S. Fish and Wildlife Service, and (2) species of concern that exist in the project area according to the State of Montana. Design elements are in place to protect birds during project implementation including "[a]ll prescribed fire and underburning would be implemented prior to May 1 or after July in order to protect nesting birds, unless surveys indicate birds are not present" (see *Mitigation Measures/Design Elements in the Wildlife section of chapter 3 of the FEIS*).
Issue #6 - Federal officials who knowingly take action that will place public health and safety in jeopardy by "concealing" important information violate 18 U.S.C. § 1001 and are thus subject to up to 8 years in prison. The DEIS at page 8 indicates the community of Elliston is in the WUI. Clearly **THE** most important responsibility of a public land manager is to protect the safety of the public. Some caring, competent public servants opt to apply Dr. Cohen's fine fuels reduction methods to reduce the risk of fire damage to homes located in the WUI in lieu of commercial logging. They also distribute pamphlets and hold workshops to explain Dr. Cohen's fire damage reduction methods and their effectiveness. **Comment:** Please inform the residents of Elliston about the superiority of Dr. Cohen's fire damage risk reduction methods over logging merchantable sized trees. I ask you to hold workshops in Elliston and distribute, present and discuss **Opposing Views Attachment #11** emphasizing Dr. Cohen's research conclusions that show: "*Effective landscape fuel reduction does not necessarily prevent WUI home fire destruction*."	**(LR-16)** Protecting homes from wildfire is not a purpose of this project. As stated in the executive summary of the Fire and Fuels Specialist Report and the FEIS, the Telegraph Vegetation Project is not designed to prevent wildfires, it is designed to be responsive to fuel build-up from dead trees resulting from the mountain pine beetle (MPB) outbreak and improve conditions for fire suppression effectiveness, as well as firefighter and public safety in the area in the event of a wildfire. Furthermore, holding public workshops on defensible space is out of the scope of this project. However, the Forest does participate in these types of events sponsored by agency partners.

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"*Vegetation management beyond the structure's immediate vicinity has little effect on structure ignitions. That is, vegetation management adjacent to the structure would prevent ignitions from flame exposure; but vegetation management away from the structure would not affect ignition from flame exposure and would not significantly reduce ignitions from firebrands*." "*The wild/and fuel characteristics beyond the home site have little if any significance to WU/ home fire losses.*"	
At the same workshop please distribute, present and discuss **Opposing Views Attachment #3** that provides a scientific discussion showing how and why fuels reduction logging does not reduce fire intensity and rate of spread. Here are 2 examples from **Opposing Views Attachment #3**: *"The notion that commercial logging can prevent wildfires has its believers and loud proponents, but this belief does not match up with the scientific evidence or history of federal management practices. In fact, it is widely recognized that past commercial logging, road-building, livestock grazing and aggressive firefighting are the sources for "forest health" problems such as increased insect infestations, disease outbreaks, and severe wildfires.*" Ingalsbee, Timothy Ph.D. 2000. **"Commercial Logging for Wildfire Prevention: Facts Vs Fantasies"** http://www.fire-ecology.org/citizen/logging_and_wildfires.htm "*The current focus on 'fuels' is, in itself, misguided because almost anything in a forest will burn, given the right conditions. Any fire specialist will tell you that the principal factors affecting fire are temperature and moisture, not fuels. No legislation will prevent or even reduce fires in the vast areas of the national forests and to pretend so is fraudulent.*" Partridge, Arthur Ph.D., Professor Emeritus, University of Idaho Testimony to the Agriculture, Nutrition and Forestry Committee United State Senate. Hearing to Review Healthy Forests Restoration Act, HR 1904 June 26, 2003 http://www.univision.co.za/offer-day-oA2A392Cr1N3B2x 2F2du3q3-music.shtml If you choose to withhold this important information from the citizens of Eliston then please familiarize yourself with 18 U.S.C. § 1001 quoted below: (a) Except as otherwise provided in this section, whoever, in any matter within the jurisdiction of the executive, legislative, or judicial branch of the	**(LR-17)** Please see Opposing Views attachment 3 below for a response.

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Government of the United States, knowingly and willfully - (1) falsifies, conceals, or covers up by any trick, scheme, or device a material fact; (2) makes any materially false, fictitious, or fraudulent statement or representation; or (3) makes or uses any false writing or document knowing the same to contain any materially false, fictitious, or fraudulent statement or entry; shall be fined under this title, imprisoned not more than 5 years or, if the offense involves international or domestic terrorism (as defined in section 2331), imprisoned not more than 8 years, or both. If the matter relates to an offense under chapter 109A, 1098, 110, or 117, or section 1591, then the term of imprisonment imposed under this section shall be not more than 8 years. (b) Subsection (a) does not apply to a party to a judicial proceeding, or that party's counsel, for statements, representations, writings or documents submitted by such party or counsel to a judge or magistrate in that proceeding. (c) With respect to any matter within the jurisdiction of the legislative branch, subsection (a) shall apply only to - (1) administrative matters, including a claim for payment, a matter related to the procurement of property or services, personnel or employment practices, or support services, or a document required by law, rule, or regulation to be submitted to the Congress or any office or officer within the legislative branch; or (2) any investigation or review, conducted pursuant to the authority of any committee, subcommittee, commission or office of the Congress, consistent with applicable rules of the House or Senate. - See more at: http://codes.lp.findlaw.com/uscode/1811/47/1001#sthash.ChXNLypx.dpuf You are not exempt from the provisions of the Administrative Procedures Act either. Under the APA, a court may set aside an agency action if the court determines that the action is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A); see also Marsh, 490 U.S. at 375-77 (arbitrary and capricious standard applies to agency findings which involve agency expertise). Here's an excerpt from this opinion: "Consequently, we may reverse the decision as arbitrary or capricious only if the agency relied on factors Congress did not intend it to consider, entirely failed to consider an important aspect of the	

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problem, offered an explanation that ran counter to the evidence before the agency, or offered one that is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." Source: **SIERRA CLUB v. BOSWORTH**. An Appeal to 9th Circuit from the United States District Court for the Eastern District of California, Filed December 5, 2007 http://caselaw.findlaw.com/us-9th-circuit/1175742.html	
I suggest you protect yourself by distributing a document to be signed by all adults living in the WUI that states they acknowledge and approve of you not using the most effective fire damage reduction methods (Dr. Cohen's fine fuels removal methods) and will not sue if their homes are destroyed by a wildfire and/or a family member is killed or injured. Indeed, my letters to the editor that will be published in your local newspapers will point this out. Are you a risk taker when people's lives are at stake?	**(8-12a)** The Powell Community Wildfire Protection Plan contains a wildfire risk analysis and fuel hazard ratings map, which can be viewed by the residences of Powell County to determine residents' proximity to designated WUI.
Mark Rey knew President Bush appointed him as USDA Undersecretary expecting him to invent excuses to log national forest land. His "fuels reduction" solution conjured up in 2003 has been proven under most conditions to be less effective at reducing fire severity and spread than other methods, yet the USFS still embraces the need to reduce fuels with commercial logging. Indeed, the pursuit of volume justifies anything in the USFS. Anyone professional with the responsibility to protect homes and human lives in the WUI should a wildfire occur would use any and all effective methods to achieve that important goal. Please consider the validity of these articles.	Thank you for your comments.
A Burning Issue: Helping Loggers, Hurting Forests By Chad Hanson Published on Monday, July 15, 2002 in the Los Angeles Times Source: http://www.commondreams.org/views02/0715-04.htm	**(LR-18)** The cited article is another opinion commentary that provides a critique on former president Bush's 2001 National Fire Plan. It was reviewed in relation to the Telegraph Vegetation project. The project does not claim it will prevent wildfire. Furthermore, since 2001, forest conditions have been altered due the mortality caused by mountain pine beetle and thus the referenced article does not apply to this project. See the Fire and Fuels section in chapter 3 of this FEIS for additional information.
Conflicting Reports Shade Forest Fire Debate By Cat Lazaroff Published by ENS on July 11, 2002	**(LR-19)** This is opinion commentary that relies on various information sources to argue against the claim that environmentalist's litigation and appeals have limited the

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Source: http://www.ens-newswire.com/ens/jul2002/2002-07-11-06.asp	ability to reduce fire hazards around communities. The article centers its discussion on a Forest Service study and a report by the GAO. The article further asserts that mechanical treatments meant to reduce wildfire hazard near communities are not effective. This article was reviewed in relation to the Telegraph Vegetation project. The Telegraph Fire and Fuels report, also in the FEIS in chapter 3, provides information on how units were located and compares between the different alternatives their effectiveness at improving suppression effectiveness and improving conditions for firefighter and public safety.
Fight Fire With Logging? By Dan Okoand Ilan Kayatsky Published by Mother Jones magazine, Wed Jul. 31, 2002 Source: http://www.motherjones.com/politics/2002/08/fight-fire-logging	**(LR-20)** The cited article is opinion commentary that provides a critique on former president Bush's 2001 National Fire Plan. It was reviewed in relation to the Telegraph Vegetation project. The project does not claim it will prevent wildfire. Furthermore, since 2001, forest conditions have been altered due the mortality caused by mountain pine beetle. See the Fire and Fuels section in chapter 3 of this FEIS for additional information.
Bush official doesn't apologize for timber policies By Matthew Daly Published by the Juneau Empire, Monday, February 25, 2008 Source: http://juneauempire.com/stories/022508/sta_250859398.shtml	**(LR-21)** This is an article published in the Juneau Empire that discusses Agriculture Undersecretary Mark Rey in relation to some of his policy. This article was reviewed in light of the Telegraph Vegetation project and was found to have very little relevance on the project.
As you know, Dr. Jack Cohen is a USFS fire physicist working in Missoula, Montana. He has devoted his entire career researching methods to reduce the risk of fire damage to homes located in the WUI. His research indicates fine fuel removal within several hundred feet of structures at risk is the most effective way to prevent damage. Dr. Cohen specifically states fuels removal is ineffective and a poor use of taxpayer's money. **Comment**: Dr. Cohen has authored many science documents describing his methods. A few excerpts are included below. As you can see, Dr. Cohen has repeatedly stated in public that fuels removal that's not immediately adjacent to structures at risk (as you are proposing) is ineffective. **Dr. Cohen states:** "*As stated, the evidence indicates that home ignitions depend on the home materials and design and only those flammables within a few tens of meters of the home (home ignitability). The wild/and fuel characteristics beyond the home site have little if any significance to WU/ home fire losses.*" (Pg. 5)	**(LR-22)** Please see Opposing Views attachment 11 shown below for a detailed response to Dr. Cohen references.

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Source for quote above: Reducing the Wildland Fire Threat to Homes: Where and How Much? Presented as the Fire Economics Symposium in San Diego, California on April 12, 1999. http://www.fs.fed.us/rm/pubs_other/rmrs_1999_cohen_j001.pdf **Dr. Cohen states**: "*Vegetation management beyond the structure's immediate vicinity has little effect on structure ignitions. That is, vegetation management adjacent to the structure would prevent ignitions from flame exposure; but vegetation management away from the structure would not affect ignition from flame exposure and would not significantly reduce ignitions from firebrands.*" (Pg. 4) **Source for quote above**: Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States Published in Forest Ecology and Management 256, 2008 http://www.firewise.org/Information/Research-and-Guidance/WUI-Home-Ignition-Research/~/media/Firewise/Files/Pdfs/Research/CohenFuelTreatment.pdf **Dr. Cohen states**: "Effective landscape fuel reduction does not necessarily prevent W-UIhome fire destruction." (Pg. 10) **Source for quote above**: Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States Published in Forest Ecology and Management 256, 2008 http://www.firewise.org/Information/Research-and-Guidance/WUI-Home-Ignition-Research/~/media/Firewise/Files/Pdfs/Research/Cohen FuelTreatment.pdf Clearly **THE** most important responsibility of a public land manager is to protect the safety of the public. Some caring, competent public servants opt to apply Dr. Cohen's methods to reduce the risk of fire damage to homes located in the WUI in lieu of commercial logging. Please join these public servants. **Comment:** Have you told the public living in Elliston why you won't consider a Dr. Cohen alternative? How will you explain this to the residents who lose their homes? If you find yourself in court, he plaintiff's attorneys will likely present the following information: "Mechanically removing fuels (through commercial timber harvesting and other means) can also have adverse effects on wildlife habitat and water quality in many areas. Officials told GAO that, because of these effects, a large-scale expansion of commercial	

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timber harvesting alone for removing materials would not be feasible. However, because the Forest Service relies on the timber program for funding many of its activities, including reducing fuels, it has often used this program to address the wildfire problem. The difficulty with such an approach, however, is that the lands with commercially valuable timber are often not those with the greatest wildfire hazards." From--Government Accounting Office: "Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats" (GAO/RCED-99-65) http://www.gao.gov/products/RCED-99-65 "The conclusions of the study are not heartening. For one thing, only 3 percent of the fuel reduction projects were conducted in the wildland-urban interface (WUI), where the threat from wildfire damages to homes and businesses is greatest. Even if you expand the borders of the WUI out by another 1.5 miles into the forests, the total percentage of fuel reduction projects conducted to reduce fire risk in WUI areas comes to 11 percent. What that means is that nine out of 10 areas logged for fuel reduction were too far away from human inhabitants to have much, if any, effect on the wildfire threat to communities. That finding echoes contentions by critics that the Healthy Forests policies of the Bush administration were primarily enacted to grant favors to their cronies in the logging industry by allowing them to cut profitable old growth and green trees rather than significantly reducing the threat of wildfire to forest communities." "A much more effective approach to mitigating wildfire threats, the study suggests, would be to adopt fire-wise policies for private property and WUI homeowners." Fire suppression is doing an outstanding job," Schoennagel told reporters, "but there is only so much they can do. So we are probably going to continue to have more home losses unless we have communities more adapted to fire." Those adaptations include using fireproof building material in WUI homes, metal roofs, and clearing brush, trees and woodpiles from around homes."	
Feeling burned: Study cuts down the Healthy Forests Restoration Act By: George Ochenski Published in the Missoula Independent, June 11, 2009	**(LR-23)** This article was reviewed in light of the Telegraph Vegetation Project. The purpose of the project is multi-faceted: The purpose of the Telegraph Vegetation Project is to be responsive to the mountain pine beetle outbreak in the area. This includes: recover economic value of the dead and dying trees, promote desirable regeneration, improve conditions for fire suppression

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http://www.missoulanews.com/index.cfm?do=article.details&id=CBB62C72-14D1-1357-9C56089E9001029D "My observations of so called fire reductions projects observed throughout the West is that most are nothing more than an excuse to log. The NFP is a Trojan Horse. Using fear of fire, and ignorance about fire ecology and what conditions support large blazes, logging proponents have so far been successful at duping the public, many politicians, and even some environmental organizations into supporting inappropriate logging proposals." "I personally would feel a lot better about any logging proposal if the FS and other supporters just came out and said, the reason we are logging is to get some timber out of the woods. Then we could have an honest debate about whether this is really in the public interest. Instead, far too many timber sales are wrapped up in the flag of fuel reductions that are neither effective nor in appropriate locations. The Schoennagel et al. review just gives further credence to this perspective. The review can be found at www.pnas.org "	effectiveness as well as firefighter and public safety in the area in the event of a wildfire, and maintain diverse wildlife habitats. The project also seeks to maintain or improve watershed values.
Burning Questions -- Why the National Fire Plan is a Trojan Horse for Logging by George Wuerthner Published by Counterpunch, June 12-14, 2009 http://www.counterpunch.org/wuerthner06122009.html **Comment:** Supervisor Avey how do you explain this. The Government Accounting Office released a document that describes the ineffectiveness (and resource damage) of mechanically removing fuels through commercial timber harvesting. "Mechanically removing fuels (through commercial timber harvesting and other means) can also have adverse effects on wildlife habitat and water quality in many areas. Officials told GAO that, because of these effects, a large-scale expansion of commercial timber harvesting alone for removing materials would not be feasible. However, because the Forest Service relies on the timber program for funding many of its activities, including reducing fuels, it has often used this program to address the wildfire problem. The difficulty with such an approach, however, is that the lands with commercially valuable timber are often not those with the greatest wildfire hazards." From---Government Accounting Office: "Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats" (GAO/RCED-99-65) http://www.gao.gov/products/RCED-99-65	**(LR-24)** This article refers to a GAO report that discusses, in part, the effectiveness of utilizing mechanical equipment for removal of fuel. The Telegraph Vegetation Project Fire and Fuels report, also in the FEIS, provides information on the use of mechanical equipment.

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Opposing Views Attachment #3 contains 56 additional articles authored by Ph.D. scientists, fire experts and even 2 USFS employees describing how logging merchantable trees to reduce the risk of fire damage to structures in the WUI must never be the only consideration. **Opposing Views Attachment #11** contains more detailed information of Dr. Cohen's life-saving methods to decrease the risk that homes will burn.	Please see below to responses to Opposing Views Attachments #3 and #11
Comment: Think about it Supervisor Avey. The American public is fortunate that a fire expert employed by your agency developed the most effective methods to reduce the risk that homes will burn in a wildfire ... and people will die. Your Proposed Action doesn't mention Dr. Cohen or his fire damage risk reduction methods. Clearly you believe logging & volume accumulation is more important than human life. We both know why you have consciously excluded a Dr. Cohen fine fuels removal alternative. If you presented it honestly, the public would wonder why you are wasting their tax dollars on logging fuels. You will be risking people's lives to "get-out-the-cut." If you choose to be irresponsible and not analyze a Dr. Cohen alternative in detail you will know if people die in a wildfire in or near Eliston it will be your fault. Log your fuels if you must but also do the right thing.	Thank you for your comment.
Request for changes to be made to the final NEPA document: Analyze a Dr. Cohen fire damage risk reduction methods alternative in detail. Also, change the P&N to reflect the real reason the USFS should take action near the Eliston. The goal as described in the P&N should not be fuels reduction. The P&N goal of this project should be to take action that will save human lives and homes before a wildfire occurs. Fuels reduction might be an alternative . . . this would include a fine fuels removal alternative.**(8-13)**	**(8-13a)** The commenter has requested a change be made to the analysis and final NEPA documents that would incorporate Dr. Cohen fire damage risk reduction methods into a new alternative. This alternative would include measures that address home ignitability. The commenter also requests that the P&N for the project be updated/changed to include actions that will save human lives and homes before a wildfire occurs. Protecting homes and saving lives from wildfire is not a purpose of this project. As stated in the executive summary of the Fire and Fuels Specialist Report and the FEIS, the Telegraph Vegetation Project is not designed to prevent wildfires, it is designed to be responsive to fuel build-up from dead trees resulting from the mountain pine beetle (MPB) outbreak and improve conditions for fire suppression effectiveness as well as firefighter and public safety in the area in the event of a wildfire. The requested alternative was not carried forward.
Issue #7 --The American people do not want their national forests logged for ANY (emphasis added) reason. The money for your salary (and the IDT members' salary) comes from tax dollars supplied by these same Americans you propose to backhand by logging their land. Do you enjoy serving your corporate masters first? The American citizens are your supervisors. Any place else in America when an employee	**(LR-25)** See the Reference section in the FEIS for a list of Best Available Science utilized to inform project analysis for each resource. This list includes literature of non-Forest Service employees. Also, see responses provided in the commenter's opposing view Attachments #1 and #4.

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consciously and willfully disobeys his/her supervisor on a regular basis they are terminated. **Comment:** Not only do you ignore your supervisors but you violate an executive order and the laws of the United States. Why do you believe the information supplied by a handful of timber IDT members financially motivated to enable and facilitate timber sales regardless of resource impacts when it is the antithesis of best science described in the **Opposing Views Attachments**? An executive order requires federal agencies to use best available science: "Science and the scientific process must inform and guide decisions of my Administration on a wide range of issues, including improvement of public health, protection of the environment, increased efficiency in the use of energy and other resources, mitigation of the threat of climate change, and protection of national security. The public must be able to trust the science and scientific process informing public policy decisions. Political officials should not suppress or alter scientific or technological findings and conclusions. If scientific and technological information is developed and used by the Federal Government, it should ordinarily be made available to the public. To the extent permitted by law, there should be transparency in the preparation, identification, and use of scientific and technological information in policymaking. The selection of scientists and technology professionals for positions in the executive branch should be based on their scientific and technological knowledge, credentials, experience, and integrity." Source: **MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES** THE WHITE HOUSE, Office of the Press Secretary, March 9, 2009 http://www.whitehouse.gov/the-press-office/memorandum-heads-executive-departments-and-agencies-3-9-09 "*General Principles of Regulation*. (a) Our regulatory system must protect public health, welfare, safety, and our environment while promoting economic growth, innovation, competitiveness, and job creation. It must be based on the best available science." "**Sec. 5**. Science. Consistent with the President's Memorandum for the Heads of Executive Departments and Agencies, "Scientific Integrity" (March 9, 2009), and its implementing guidance, each agency shall ensure the objectivity of any scientific and technological information and	

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processes used to support the agency's regulatory actions." Source: **Improving Regulation and Regulatory Review** Executive Order 13563 of January 18, 2011 Published in: the Federal Register, Vol. 76, No. 14 Friday, January 21, 2011 http://www.gpo.gov/fdsys/pkg/FR-2011-01-21/pdf/2011-1385.pdf The Telegraph timber sale area contains streams that have year round resident fish. Federal agencies are required by law to use best available science as a basis for their decisions: "(2) Conservation and management measures shall be based upon the best scientific information available." Source: **16 U.S.C. § 1851 : US Code - Section 1851: National standards for fishery conservation and management**. http://codes.lp.findlaw.com/uscode/16/38/IV/1851 **Comment:** Even the USFS acknowledges that the public does not want their public lands logged. Please read about Chief Thomas' survey below: In 2002, 5,064 Americans were randomly selected in the lower 48 states. This statistically significant survey was intended to measure what the public wants from their national forests. They were asked about their values with respect to public lands, objectives for the management of public lands, beliefs about the role the agency should play in fulfilling those objectives, and attitudes about the job the agency has been doing. The survey was contracted by Chief Thomas. Why was the survey done? The results were needed to support the 2000 USDA Forest Service RPA Assessment. Gen. Tech. Rep. RMRS-GTR-95. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Here are a few quotes from the final report: "The public sees the restriction of mineral development and of timber harvest and grazing as being more important than the provision of natural resources to dependent communities (although this is still seen as somewhat important)." (page 28) "Highly familiar members of the public are less likely to support policies that eliminate timber harvest and mining in order to preserve natural resources. These same respondents are also less likely to see the protection of ecosystems and watershed and the preservation of a wilderness experience as appropriate roles for the USDA Forest Service." (page 54)	

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Link to survey: http://www.fs.fed.us/rm/pubs/rmrs_gtr095.pdf Of the 5,064 Americans surveyed, 589 indicated they were "highly familiar" with the USDA Forest Service. This means 88.4% of those surveyed with moderate or low familiarity support elimination of timber harvest and mining, and instead prefer the agency employees to spend their tax dollars on protecting watersheds from harm and less consumptive services. What will the judge conclude when the plaintiff's attorney introduces this information? **Comment:** You know there is no "timber famine" as the USFS has been so fond of predicting for many decades. There is no shortage of raw materials for paper and wood products in the United States. Therefore, there is no reason to have commercial timber sales in the national forests. Only 4.8 % of the raw materials for domestically used wood products and paper come from national forest land. The USFS could stop logging today and the market would never react. The volume would be replaced from private-industrial tree farms and private sources without blinking an eye. **Comment:** Over 200 Ph.D. scientists are quoted in **Opposing Views Attachments #1 and #4.** They describe how and why logging and reading at any location at any time inflict heavy, unacceptable damage to the amenity natural resources in the national forests so loved by 322 million Americans. Since you defy their recommendations you must believe your Telegraph timber sale is different or special. Why do the independent scientists' clear descriptions of the massive resource damage caused by timber sales such as yours not apply to the Telegraph sale? **Comment**: For decades the USFS has been telling the public that their projects are all based on "best science." **The Best Science Attachment** contains quotes of the following USFS officials who stress "best science" drives agency actions: Hilda Diaz-Soltero, Dr. Ann Bartuska, Chief Dale Bosworth, Associate Chief Sally Collins, Heidi Valetkevitch, Chief Mike Dombeck, Chief F. Dale Robertson, Agriculture Secretary Dan Glickman, Chief Tom Tidwell, John Potyondy, Ann Melle, and Merrill Kaufmann. **The Opposing Views Attachments** contain the quoted statements of hundreds of Ph.D. scientists who describe how logging and road construction should be avoided in the forest to assure all natural resources will function properly. In spite of this best science, you choose to take the advice of 24 IDT members to sell the Telegraph timber sale. The 5 timber, engineering and fire/fuels members of the IDT are all financially motivated to sell national forest trees. The rest of the IDT	

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members know its important to you to sell this timber sale. The bias is clear.	
Request for changes to be made to the final NEPA document: Include a discussion and supporting data justifying why it's appropriate to take action on public land that the vast majority of the American public does not want to occur. Demonstrate why you feel the Telegraph timber sale serves the majority of the American people, or explain why serving the natural resource extraction corporations is more important. **(8-13b)** The discussion should explain why the recommendations of over 200 Ph.D. scientists represented in **Opposing Views Attachments #1 and #4** aren't applicable to the Telegraph sale area and/or why the information provided by several timber IDT members should trump these independent scientists' research conclusions, thus establishing USFS IDT members' information as "best available science.	**(8-13b)** – Chapters 1 and 2 of this FEIS provide the purpose and need for the project in detail as well as the proposed alternatives analyzed. Responses to Opposing Views Attachments #1 and #4 can be viewed below.
Issue #8 -- Please post your responses to public comments on this online as well as maintaining a hardcopy in the Project File. **Comment:** Members of the public who submit comments on a draft NEPA document make the effort to read the NEPA document closely and take the time to compose comments that reflect their issues. Unless you respond to these comments and allow the public to read your responses they don't know if their comments were read and "considered." Plus, such responses show you aren't ignoring the public. **Request for changes to be made to the final NEPA document:** Post your responses to ALL public comments online so all 322 million Americans might read them if they choose. (8-14) Hiding your responses to comments in the Project File clearly violates United States' law.	**(8-14a)** Response to Comments on the Telegraph Vegetation Project DEIS can be viewed in appendix E to this FEIS and will be posted on the Forest's projects website.
Issue 9 - Competent, professional USFS line-officers don't backhand and insult the Public they supposedly serve by declaring their comments to be "non- significant." **Rejecting public input is not trivial.** Avey your cut & paste excuse to reject public issues critical of the project that would be impossible for you to deny isn't impressive. Describing some issues submitted by American citizen owners of the Helena National Forest as "non-significant" as is the case here indicates your unprofessional arrogance and disdain for the public. It shows your willingness to backhand members of	**(8-14b)** The public participation section located in the FEIS summarizes the public participation plan and efforts used throughout the planning for the Telegraph Vegetation Project. Also, the project record contains the content and comment analysis outputs for both scoping comments and comments on the DEIS. 40 CFR §1506.6 (Public Participation) states "*Agencies shall: Make diligent efforts to involve the public in preparing and implementing their NEPA procedure.*"

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the public who even suggest that your sacred timber sale might not be a wise thing to pursue. Tomorrow when you and your IDT members genuflect to corporate America as you enter your office please think about this. How would a **real** public servant behave? When the public expresses their concern about natural resource harm as part of their comments, they expect the other resource specialists on the IDT who are responsible to protect the natural resources that will likely be harmed to respond with actions to assure the harm does not occur. Guess what? The American public does **not want any** amenity natural resources damaged or impaired ... even if its "short term." This isn't such a difficult concept is it? You and your IDT members comply with the USFS playbook by rejecting especially pertinent scoping comments because they raise issues the Responsible Official will be unable to respond to honestly without jeopardizing this timber sale. So what do you all do? You cite the following 4 USFS approved reasons routinely used by agency employees to dismiss and rebuff the Americans who are trying to become involved in the NEPA process: **1) outside the scope of the proposed action**; **Comment**: The Americans who submitted the rejected comments want to know why and deserve an answer. You and your IDT members indicate the comments were determined to be "non-significant" because they are "outside the scope of the proposed action." How and why are they "outside the scope?" Of course you won't discuss this online because there is nothing you can say that's truthful. You know an honest response to their comments might jeopardize your precious timber sale. What's your solution to this "problem?" Dismiss and spurn the public you claim to serve. **2) already decided by law, regulation, Forest Plan, or other higher-level decision;** **Comment:** The Americans who submitted the rejected comments want to know why and deserve an answer. You and your IDT members indicate the comments were determined to be "non-significant" because they are "law, regulation, Forest Plan, or other higher-level decision." An intelligent, meaningful response to comments rejected for this reason would be to disclose the "law, regulation, Forest Plan, or other higher- level decision." Of course you won't discuss this online because there is nothing you can say that's truthful. You know an honest response to their comments might jeopardize your precious timber sale. What's your solution to this "problem?" Dismiss and spurn the public you claim to serve.	

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3) irrelevant to the decision to be made; or **Comment**: The Americans who submitted the rejected comments want to know why and deserve an answer. You and your IDT members indicate the comments were determined to be "non-significant" because they are "irrelevant to the decision to be made." How and why are they "irrelevant to the decision to be made?" Of course you won't discuss this online because you know they are clearly relevant. You know an honest response to their comments might jeopardize your precious timber sale. What's your solution to this "problem?" Dismiss and spurn the public you claim to serve. **4) conjectural and not supported by scientific or factual evidence** **Comment:** You refuse to respond to public comments because they are not "supported by scientific or factual evidence." Why are some important claims and statements in this pre-deisional EA DEIS not "supported by scientific or factual evidence?" Telling the public their comments are "non-significant" is criminal. On what page of the draft NEPA document does it tell the public issues will not be seriously considered unless they are "supported by scientific or factual evidence." **Comment:** Telling the public their comments are "non-significant" is criminal. Americans who wish to become involved in the management of their land expect to be taken seriously. Your rude behavior shows why whoever promoted you to line-officer made a terrible mistake. These 4 reasons for rejecting public comments that oppose your projects are used in this DEIS and ALL previous timber sale NEPA documents prepared on the Helena NF. How convenient for your IDT members. They excel at cut & paste analysis. You and your pathetic IDT members have discouraged the public from becoming involved in decisions that affect their land, thus you have failed to "encourage and facilitate public involvement" and did not "make diligent efforts to involve the public." Where does this quote come from? Telling some members of the public their comments are worthless, unimportant and insignificant is bad enough. Failing to tell them why is worse.	
Request for changes to be made to the final NEPA document: Assure that all (emphasis added) issues identified by the public are listed in the body of the NEPA document posted online and hardcopy**.(8-15)** If you feel this is impossible and still want to abuse the public, then tell them why their issue is "non-significant." How would this be done? You would	**(8-15)** The Telegraph Vegetation Project FEIS contains the issues identified by the public and is made available both online and in hardcopy form. Also, the project record contains the content and comment analysis outputs for both scoping comments and comments on the DEIS.

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identify their issue and indicate which of the following reason renders the issue ""non-significant." 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher-level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence Finally you will explain how and why the issue is "outside the scope," irrelevant," or "conjectural." If you believe the is already decided by law, regulation, Forest Plan, or other higher-level decision, identify the specific section of the law, regulation, Forest Plan, or other higher-level decision.	
Issue #10 -- Increases in national forest logging do not stabilize or enhance the economy of small communities located near them. One of your purposes listed in the P&N at page 6 for this timber sale is "Provide Wood Products for Local Economies" The IDT members include this in their P&N because they know it's a commonly used, approved USFS excuse to log public land'. This need is only legitimate if an analysis of the recreation/tourism related businesses in the local communities shows they don't generate much money or employ many people. Consider the following excerpts from a research paper that examined community stability vs. increased logging. The study was done on small communities near national forests in Washington State: "The relationship between timber harvest and the overall economic health of Washington communities assumed to be most dependent on logging and forest products runs counter to commonly held assumptions." "Despite a 93 percent decline in National Forest timber harvests and the loss of 7,300 forest products jobs statewide between 1988 and 1998, the number of people employed outside of forest products expanded by 726,000 (total employment increased 33 percent), total real income expanded by almost 50 percent, and population rose by 23 percent." "Economic vitality was especially evident in the largely non-metropolitan counties adjacent to National Forest lands in eastern and Southwestern Washington. Although 3,000 forest products jobs were lost, more than 170,000 jobs were added outside that sector. The counties adjacent to the National Forests were not driven into economic	**(LR-26)** The literature submitted by the commenter (Dr. Powers and Mr. Niemi and Ms. Fifield), present an argument with similar conclusions about the role wood products play in rural economies. They make a case that the relationship between timber harvest and overall economic health of rural communities are not dependent on logging. Regardless, the Telegraph Vegetation Project does not claim that a rural community's economic health is dependent on logging. Instead, the Economics section in chapter 3 of the FEIS, discusses how the Telegraph project could contribute to near-by economies by projected total jobs created and labor income generated over the life of the project primarily in the wood products industry. Furthermore, the FEIS in chapter 3 provides analyses for various resources including any potential impacts caused by proposed project activities.

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depression as a result of 70 to 90 percent declines in federal harvests. Instead, average real income, employment, and population expanded significantly." "Even within relatively isolated areas, such as the northeastern tier of counties, there was considerable economic vitality despite the declines in federal timber harvests. In general, all areas gained population at rates above the national average. Some areas, such as Okanogan County, did almost as well as the state's metropolitan areas despite the decline in federal harvests." "The relatively high unemployment rates in many of the eastern Washington counties adjacent to National Forests cannot be attributed to the decline in federal harvests. Those counties had even higher unemployment rates at the time of peak harvests in the late 1980s. The unemployment rates in excess of the state average did not rise as federal harvests fell dramatically from these peak levels." "While its true that average real pay is low in the eastern and southwest Washington counties adjacent to National Forests, this low pay is not the result of the decline in federal harvests. Average real pay plunged during the 1980s while federal harvests were rising to peak levels. In fact, while federal harvests fell in the 1990s, average pay stabilized or increased." "Federal payments to local governments from revenue generated by local National Forest lands declined with federal harvests during the 1990s. This, however, did not cause an overall decline in the revenues available to local governments. Local and state economic vitality allowed local government revenues to double in the 1990s despite the reduction of the National Forest contributions." From "The Economic Impact of Preserving Washington's Roadless National Forests" by Thomas Michael Power, Ph.D., Professor of Economics, University of Montana, June 13, 2000. Links to complete article: http://www.kettlerange.org/power/ExecSummarv.htm http://www.kettlerange.org/power/powerreport.htm **Comment:** Dr Power makes the following conclusions from his research findings: "Even within relatively isolated areas, such as the northeastern tier of counties, there was considerable economic vitality despite the declines in federal timber harvests." "The relatively high unemployment rates in many of the eastern Washington counties adjacent to National Forests cannot be attributed to the decline in federal harvests. Those counties had even higher	

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unemployment rates at the time of peak harvests in the late 1980s." Please describe why Dr. Power's research does not apply to the Helena National Forest. **ECONorthwest reached conclusions similar to those of Dr. Power quoted above:** "(1) Despite years of rhetoric and misinformation, national and regional economies are not dependent on logging National Forests. The most often cited misconception is that the regional economy of the Pacific Northwest declined after a court injunction and related events reduced National Forest logging. In fact, instead of collapsing, the region's economy expanded and the Pacific Northwest weathered virtually unscathed the national economic recession that occurred at the same time as the court injunction. (2) National Forests now produce goods and services that are much more significant than the value of logging. (3) The Forest Service logging program has caused devastating impacts in the ability of the National Forests to provide economically valuable goods and services. Reversing the damage caused by logging will be costly but ignoring the need to restore damaged forests will cost even more." From: EcoNorthwest, "Seeing Forests for their Green: Economic Benefits of Forest Protection, Recreation, and Restoration", August 13, 2000 http://econw.com/our-work/publications/seeing-forests-for-their-green-economic-benefits- of-forest-protection-recre/ **Comment:** Mr. Niemi and Ms. Fifield (the authors of this paper) conclude: "Despite years of rhetoric and misinformation, national and regional economies are not dependent on logging National Forests." Please describe why their research findings do not apply to the Helena National Forest. U.S. Undersecretary of Agriculture Jim Lyons states that recreation revenues from national forests significantly exceed timber revenues. Please see: http://www.americantrails.org/resources/economics/EconForestRec.html Also see this compelling information: http://illinois.sierraclub.org/piasapalisades/factshee.htm Here's more from the Portland Oregonian:	

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"Increased logging on federal lands will not fix these problems. Instead, it will diminish jobs in one of Oregon's fastest growing industries, outdoor recreation. The outdoor recreation industry employs about 140,000 workers in Oregon (logging and wood-products manufacturing employ fewer than 30,000). Nationally, jobs in outdoor recreation are growing 5 percent annually. High- quality recreation attracts middle- and high-income families to settle in rural counties, too, boosting local economic activity. There is abundant research and data showing that our federal forests would do far more for workers, families and local businesses if managed for ecosystem and human health rather than as tree farms." From: Logging expansion won't help rural communities Portland Oregonian online, June 29, 2014 http://www.oregonlive.com/opinion/index.ssf/2014/06/logging_expansion_wont_help_ru.html **Comment:** Why do you reject the findings and conclusions of Undersecretary of Agriculture Jim Lyons and well respected scientists? They all make the case that 1) recreationists avoid areas that have been logged, and 2) recreation-related revenues to local communities with lumber mills is much more than the revenues generated by logging? **Comment:** You reject the research conclusions of 241 Ph.D. scientists quoted in **Opposing Views Attachment #1** who demonstrate how logging-related harm (and in a few cases destruction) is inflicted on multiple natural resources in and near the sale area. Incredibly, you rely on the advice of 3 or 4 timber employees financially motivated to sell timber. You know the log for community stability P&N statement appears in at least 80% of all timber sale NEPA documents. This has become the commonly used excuse by USFS line-officers to sell unneeded timber sales and you use it here. **Comment:** If you were really concerned about local community stability and local job creation you would offer this sale as an SBA sale to prevent a large timber corporation from logging it using their own labor. This would prevent the logs from being hauled many miles to be processed at a mill far removed from the small communities you claim need economic help. Of course your motivation to sell this timber sale has nothing to do with community stability. We both know "local community stability" and "local job creation" is part of the USFS dishonest script to trick the public into accepting tragic timber sales.	

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<u>Request for changes to be made to the final NEPA document:</u> Either: 1) remove the following statement from the P&N:(**8-16)** "Provide Wood Products for Local Economies"	**(8-16)** This component of the purpose and need is described in the Purpose and Need section in chapter 1 of the FEIS.
OR 2) offer the sale as an SBA sale and say so in the final EIS**, (8-17)**	**(8-17)** See response to (8-16).
OR 3) include the following papers (referenced above) **(8-18)** in their entirety in an Appendix to the NEPA document. Line-officers must not withhold such important information from the public. Congress promulgated laws to prevent zealous federal officials from behaving in such a manner to feather their nest. "*The Economic Impact of Trails-Forest Recreation's Growing Impact*" "*Seeing Forests for their Green: Economic Benefits of Forest Protection, Recreation, and Restoration*", " *The Economic Impact of Preserving Washington's Roadless National Forests*"	**(8-18)** The listed literature is included in the project record.
<u>Issue #11</u> -- Federal officials who knowingly take action that will place public health and safety in jeopardy by "concealing" important information violate 18 U.S.C. § 1001 and are thus subject to up to 8 years in prison. The DEIS at page 34 indicates you will apply herbicides but fails to disclose the type or formulation of the herbicide. **(8-19)** Withholding such important information about toxic chemicals from the public is not a trait of a public servant. Why Mr. Davidson does chooses to hide this important information from the public? If any of the herbicides you plan to spray is a herbicide that contains glyphosate, then please change your plans. There is information widely available that discusses the dangers and toxicity of some herbicide products sold over-the-counter in America. As you will learn below, other countries protect their citizens by taking the vast amount of scientific information seriously. If these products (in this case herbicides) provide profit for the corporation that manufactures the product, the corporation will stop at nothing to prove their product is safe. Incredibly, some government regulatory agencies (FDA, EPA etc.) choose to look the other way when confronted by these dangers. This is the case with Monsanto and their herbicides	**(8-19)** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record.

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that contain glyphosate. There are scores of brand names for herbicides that contain glyphosate. Roundup is the most popular. Indeed, there is a reason the United States is currently having a cancer epidemic much worse than other industrialized countries.	
Comment: Supervisor Avey, please read **Opposing Views Attachment #9a**. Are you prepared to make an independent, fully-informed Decision using the Precautionary Principle wisdom? Please see below: "*When an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically*." Source: http://www.sehn.org/ppfaqs.html **Comment**: Supervisor Avey, as you will learn below even casual exposure to herbicides that contain glyphosate is shown in the lab to cause cancer in mammals. Of course now you are wondering what you can do to disprove these science conclusions. You might not even believe that glyphosate is unsafe. I suggest you search the WEB for the 2 words "glyphosate" and "cancer." When you do you will get 79,600 hits. They can be a\read at: http://www.bing.com/search?q=glyphosate+cancer&qs=n&form=QBLH&pg=glyphosate+cancer&sc=2-17&sp=-1&sk=&cvid=a9a7e18786764443aa59079d8144f559 Supervisor Avey, please don't tell the public everything will be fine since you plan to apply the herbicide according to label directions. Monsanto would not dare to say anything that might indicate to the public there are health issues associated with their products. The label directions must not be trusted. Monsanto pays other chemical labs to do the safety research on their glyphosate-containing herbicides. These labs know what Monsanto wants. The label directions printed and composed by Monsanto are based on this type of so-called safety evaluation. It should not be necessary to explain further. **Attachment 9a** contains statements by hundreds of well respected Ph.D. scientists who describe their research findings on the safety of herbicides containing glyphosate. Their research indicates glyphosate containing herbicides clearly kill fish at very small concentrations and may be linked to the following health problems in mammals (including humans): • birth defects, • non-Hodgkin's lymphoma (a form of cancer), • mitochondrial damage,	**(LR-27)** Responses to Opposing Views Attachment #9a can be viewed below.

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• cell asphyxia, • miscarriages, • attention deficit disorder, • endocrine disruption, • DNA damage, • skin tumors, • thyroid damage, • hairy cell leukemia (another cancer), • Parkinson disease, • premature births, • decrease in the sperm count, • harm to the immune system in fish • death of liver cells, • severe reproductive system disruptions • and chromosomal damage. **Comment:** Supervisor Avey, would you apply a chemical to your yard where children play in the grass that was banned in Denmark 10 years ago because of its lethal effects? See http://www.twnside.org.sg/title/service76.htm **Comment:** Supervisor Avey, would you apply a chemical to your yard where children play in the grass that the Institute of Science in Society based in London England calls for banning in England? See: http://wwW.i-sis.org.uk/about.php and http://www.i-sis.org.uk/Ban_Glyphosate_Herbicides_Now.php http://permaculturenews.org/2012/11/01/why-glyphosate-should-be-banned-a-review-of-its-hazards-to-health-and-the-environment/ **Comment:** Supervisor Avey, would you apply a chemical to your yard where children play in the grass that Italy wants banned for use in the country? See: http://ultraculture.org/blog/2013/07/24/italy-throw-out-monsanto-us-asleep/ **Comment:** Supervisor Avey, would you apply a chemical to your yard where children play in the grass that El Salvador banned in October 2013? See: http://www.naturalnews.com/042608_El_Salvador_glyphosate_ban_Monsanto.html# **Comment:** Supervisor Avey, would you apply a chemical to your yard where children play in the grass that Sri Lanka banned in March 2014? See: http://www.icij.org/blog/2014/03/sri-lanka-bans-leading-monsanto-herbicide-citing-deadly-disease-fears	

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Comment: Supervisor Avey, would you apply a chemical to your yard where children play in the grass that France just banned (June 2015) See: http://www.takepart.com/article/2015/06/15/france-bans-herbicide http://www.commondreams.org/news/2015/06/15/offensive-against-monsanto-france-removes-roundup-store-shelves **Comment**: If you think it's inappropriate to use chemicals banned for use in other countries in your yard when children play, then why do you propose applying the poison glyphosate to public land? Please respond. This is not a rhetorical question. Supervisor Avey, Americans read articles about Roundup on a regular basis. Most know it's a likely carcinogen. I know you will apply glyphosate regardless of the killing that will result. Why? You rely on outdated so-called safety test conclusions. If your final NEPA document still approves glyphosate, it will be time to take you to the court of public opinion. My letters to the editor won't pull punches. I'll suggest that the public calls Regional Forester Marten to ask why you are applying poison to the Helena National Forest when there are non-chemical alternatives. Ask yourself why the poison called glyphosate is banned for use in 3rd word countries and still allowed in the United States. Now ask yourself why Congress included Section 735 in the 2013 spending bill (HR 933) that was signed by President Obama. Section 735 is known by many as the "Monsanto Protection Act." See: http://www.ibtimes.com/monsanto-protection-act-5-terrifying-things-know-about-hr-933-provision-1156079 Read the literature at the link below to learn what any government agency must do before applying poison: http://www.okanogan1.com/ecology/weeds/risky/Chapter-3.html **Comment:** You cite your outdated 2005 Helena Forest Herbicide FEIS & ROD as the basis for your conclusion that herbicides containing glyphosate are safe if used according to label directions. Once again, The Monsanto Corporation composed the text of the label directions and printed the label directions. Roundup was Monsanto's top selling product in 2013. That year Monsanto's earnings were 14.87 billion dollars. When the judge reads your 2005 Helena Forest Herbicide FEIS ROD and compares it's safety conclusions with the information authored by hundreds of independent Ph.D. chemists that describe the tragic health problems caused by these toxic herbicides in **Opposing**	

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Views Attachment #9a which will carry the most weight? Your FEIS & ROD are 10 years old. Do you really think the science hasn't changed in 10 years? Why isn't there a more recent supplemental FEIS & ROD? **Comment:** Supervisor Avey, why do you reference your 2005 Helena Forest Herbicide FEIS ROD and not include it in an Appendix or provide the public with a link to the electronic version of the 2005 Helena Forest Herbicide FEIS & ROD? Why is the FEIS & ROD not listed in the References section? Does it really exist? Are you still unsure about Monsanto's glyphosate safety? Please read this article in the April 2013 issue of Entropy magazine: http://www.mdpi.com/1099-4300/15/4/1416 We know Glyphosate-containing herbicides are potentially lethal... but there is more. Within the last few days new research results have been made public. Roundup is responsible for the massive monarch butterfly population reduction. See: http://www.bing.com/search?q=monarch+decline+Monsanto%E2%80%99s+Roundup+&qs=n&form=QBLH&pq=monarch+decline+monsanto%E2%80%99s+roundup+&sc=O-O&sp=-1&sk=&cvid=d8d3b58795f4444abadf6dc2835f8020 Glyphosate causes children to be born with birth defects: "*Farm families that applied pesticides to their crops in Minnesota were studied to see if their elevated exposure to pesticides caused birth defects in their children. The study found that two kinds of pesticides -- fungicides and the herbicide Roundup -- were linked to statistically significant increases in birth defects*. *Roundup was linked to a 3-fold increase in neurodevelopmental (attention deficit) disorders.*" [EHP Supplement 3, Vol. 110 (June 2002), pgs. 441-449.]	
Monsanto's Roundup Herbicide Threatens Public Health *Rachel's Environment and Health News*, issue 751, Sept. 5, 2002. Reprinted by Organic Consumers Association http://www.organicconsumers.org/Monsanto/roundup92502.cfm "The establishment of the WHO's Acceptable Daily Intake (ADI) is based on limited studies using limited parameters which do not account for vulnerable groups such as children, the elderly, the sick and	**(LR-28)** This literature listed in the left hand column regarding the use of herbicide was reviewed in light of the Telegraph Vegetation Project. There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). Therefore, these references are not relevant to the project. For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed

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other groups that might have increased susceptibility to glyphosate exposure."	Treatment Project EIS (2006) located in the Telegraph project record.
Concerns Over Glyphosate Use The Sun (Malaysia), Friday August 20, 1999 http://www.poptel.org.uk/panap/archives/glywb.htm Would the Journal of Environmental Research and Public Health have reason to publish a story that is not true? "***Abstract****: The current chronic kidney disease epidemic, the major health issue in the rice paddy farming areas in Sri Lanka has been the subject of many scientific and political debates over the last decade. Although there is no agreement among scientists about the etiology of the disease, a majority of them has concluded that this is a toxic nephropathy. None of the hypotheses put forward so far could explain coherently the totality of clinical, biochemical, histopathological findings, and the unique geographical distribution of the disease and its appearance in the mid-1990s. A strong association between the consumption of hard water and the occurrence of this special kidney disease has been observed, but the relationship has not been explained consistently. Here, we have hypothesized the association of using glyphosate, the most widely used herbicide in the disease endemic area and its unique metal chelating properties. The possible role played by glyphosate-metal complexes in this epidemic has* not *been given any serious consideration by investigators for the last two decades. Furthermore, it may explain similar kidney disease epidemics observed in Andra Pradesh (India) and Central America. Although glyphosate alone does not cause an epidemic of chronic kidney disease, it seems to have acquired the ability to destroy the renal tissues of thousands of farmers when it forms complexes with a localized geo environmental factor (hardness) and nephrotoxic metals.*"	

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Monsanto's Roundup linked to fatal, chronic kidney disease February 2014 issue Link: http://www:mdpi.com/1660-4601/11/2/2125 Would the International Agency for Research on Cancer have reason to publish a story that is not true? "Analyzing 44 individual research projects published since 1980, the scientists, writing in the International Journal of Environmental Research and Public Health. said that people exposed to the weed killer glyphosate, marked by Monsanto under the brand name Roundup, had double the risk of developing non-Hodgkin's lymphoma."	
Study: Glyphosate Doubles Risk of Lymphoma By Emily Cassidy, Biofuels Research Analyst AgMag BLOG, May 23, 2014 Link: http://www.ewg.org/agmag/2014/05/study-glyphosate-doubles-risk-lymphoma Would the USGS have reason to publish a false report in Environmental Toxicology and Chemistry?	
Monsanto"s Roundup persists in soil and water February 2014 issue Link: https://www.ncbi.nlm.nih.gov/pubmed/24549493 If you believe the outdated, biased USFS sources that show herbicides containing glyphosate are safe you will live the rest of you life wondering. Any reasonable, thinking, ethical person with this knowledge would deal with noxious weeds with the slightly more expensive alternatives to chemicals. The USFS has no mandate to prop-up Monsanto does it?	
Here's more: **Glyphosate -Human Health and Ecological Risk Assessment Final Report** http://www.klamathforestalliance.org/Documents/glyphosate.pdf "*Striking increases in the incidence of non-Hodgkin lymphoma cancer have occurred over the past 30 years. A 2014 systematic review and meta-analysis of epidemology studies broke down the relationship between non-Hodgkin lymphoma and occupational exposure to agricultural pesticides by group and by active ingredient.*	

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Among the findings - a handful of those studies identified a positive association between glyphosate and B cell lymphoma (a type of non-Hodgkin lymphoma). *Given the information gaps in the chemical registration process (considerations of endocrine disruption in risk assessment, anyone?) and the fact that we know it can take years for science to catch up with pesticide effects, even pesticides like glyphosate that are described as "less toxic" should still raise big questions and be closely tracked."*	
"Roundup Ready" nears the end of the line By Emily Marquez GroundTruth, July 7, 2014 Link: http://www.panna.org/blog/roundup-ready-nears-end-line "Monsanto's herbicide Roundup has been linked to a mysterious fatal kidney disease epidemic that has appeared in Central America, Sri Lanka and India." "We know that political changes in Sri Lanka in the late 1970s led to the introduction of agrochemicals, especially in rice farming. The researchers looked for likely suspects. Everything pointed to glyphosate. This herbicide is used in abundance in Sri Lanka. Earlier studies had shown that once glyphosate binds with metals, the glyphosate-metal complex can last for decades in the soil. Glyphosate was not originally designed for use as an herbicide. Patented by the Stauffer Chemical Company in 1964, it was introduced as a chelating agent. It avidly binds to metals. Glyphosate was first used as a descaling agent to clean out mineral deposits from the pipes in boilers and other hot water systems. It is this chelating property that allows glyphosate to form complexes with the arsenic, cadmium and other heavy metals found in the groundwater and soil in Central America, India and Sri Lanka. The glyphosate-heavy metal complex can enter the human body in a variety of ways. The complex can be ingested, inhaled or absorbed through the skin. Glyphosate acts like a Trojan horse, allowing the bound heavy metal to avoid detection by the liver, since the glyphosate occupies the binding sites that the liver would normally latch onto. The glyphosate-heavy metal complex reaches the kidney tubules, where the high acidity allows the metal to break free of the glyphosate. The cadmium or arsenic then damages the kidney tubules and other parts of the kidneys, ultimately resulting in kidney failure and, most often, death."	

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"**Monsanto's Herbicide Linked to Fatal Kidney Disease Epidemic: Could It Topple the Company?"** By Jeff Ritterman, M.D. Truthout, July 10, 2014 Link: http://www.truth-out.org/news/item/24876-monsantos-herbicide-linked-to-fatal-kidney-disease-epidemic-will-ckdu-topple-monsanto High school students know the truth, yet USFS goon look the other way: http://www.k12science.missouristate.edu/JuniorAcademy/MJAS%20Docs/State%202009/Papers%202009/HS_ENV/Foulk_Kayla_HS.pdf	
Are you still sure of yourself? Read: http://www.greenmedinfo.com/blog/surprise-monsanto-funded-research-finds-their-products-safe http://kettlerange.org/weeds/Chapter-3.html http://www.boulderweekly.com/article-12640-muzzled-by-monsanto.html http://www.ringoffireradio.com/2013/12/monsanto-wins-journa1-retracts-study-citing-dangers-gm-corn-roundup/ http://www.panna.org/blog/roundup-cancer-future- food?utm_source=groundtruth&utm_medium=alert&utm_campaign=gt-04-16	
Supervisor Avey, most of the human and non-human animal deaths caused by glyphosate exposure will be cancer-related. I suggest you read 18 U.S.C. § 1001 and the Administrative Procedures Act. The courts are aware of the USDA illegal herbicide use. Please see the sample of court cases below. Ignoring this clear evidence violates the APA. In **Californians for Alternatives to Toxics, et al. v. Michael Dombeck**, Civ. S-00- 2016 LKK/JFM (2001), Judge Lawrence Karleton presiding in the United States District Court for the Eastern District of California made the following findings: "*The Forest Service cannot proceed with the plan until it assesses how use of the herbicides would affect the spread of noxious weeds and considers new information that calls into question earlier Forest Service findings that use of the herbicides would not harm humans and wildlife.*" Of course the choice is yours Supervisor Avey. Can you now understand that the evidence overwhelmingly indicates glyphosate is a potent	**(8-19b)** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record.

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carcinogen. There are thousands of sites on the WEB that clearly indicate glyphosate is potentially lethal. Incredibly, you depend on a single document endorsed by the USDA declaring that glyphosate is safe. There are alternatives to herbicides. Spend a little more money using mechanical and/or biological control. I guarantee you will sleep better ... especially when you think of kids. Glyphosate is driving the Monarch butterfly species to extinction> https://mail.google.com/mail/?shva=1#inbox/148043eb3ca4fb6b Please don't do something tragic just because the USFS says you can. It's time for independent thinking isn't it? Monsanto spends millions $$ each year on their ongoing PR campaign. Don't believe it. Please familiarize yourself with 18 U.S.C. § 1001 quoted below: (a) Except as otherwise provided in this section, whoever, in any matter within the jurisdiction of the executive, legislative, or judicial branch of the Government of the United States, knowingly and willfully - (1) falsifies, conceals, or covers up by any trick, scheme, or device a material fact; (2) makes any materially false, fictitious, or fraudulent statement or representation; or (3) makes or uses any false writing or document knowing the same to contain any materially false, fictitious, or fraudulent statement or entry; shall be fined under this title, imprisoned not more than 5 years or, if the offense involves international or domestic terrorism (as defined in section 2331), imprisoned not more than 8 years, or both. If the matter relates to an offense under chapter 109A, 1098, 110, or 117, or section 1591, then the term of imprisonment imposed under this section shall be not more than 8 years. (b) Subsection (a) does not apply to a party to a judicial proceeding, or that party's counsel, for statements, representations, writings or documents submitted by such party or counsel to a judge or magistrate in that proceeding. (c) With respect to any matter within the jurisdiction of the legislative branch, subsection (a) shall apply only to - (1) administrative matters, including a claim for payment, a matter related to the procurement of property or services, personnel or employment practices, or support services, or a document	

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required by law, rule, or regulation to be submitted to the Congress or any office or officer within the legislative branch; or (2) any investigation or review, conducted pursuant to the authority of any committee, subcommittee, commission or office of the Congress, consistent with applicable rules of the House or Senate. - See more at: http://codes.lp.findlaw.com/uscode/18/1/47/1001#sthash.ChXNLypx.dpuf You are not exempt from the provisions of the Administrative Procedures Act. Under the APA, a court may set aside an agency action if the court determines that the action is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A); see also Marsh, 490 U.S. at 375-77 (arbitrary and capricious standard applies to agency findings which involve agency expertise). Here's an excerpt from this opinion: "Consequently, we may reverse the decision as arbitrary or capricious only if the agency relied on factors Congress did not intend it to consider, entirely failed to consider an important aspect of the problem, offered an explanation that ran counter to the evidence before the agency, or offered one that is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." **Source: *SIERRA CLUB v. BOSWORTH*.** An Appeal to 9th Circuit from the United States District Court for the Eastern District of California, Filed December 5, 2007 http://caselaw.findlaw.com/us-9th-circuit/1175742.html **Comment:** Multiple, recent independent science research on glyphosate at safety at labs not funded by Monsanto find glyphosate cause the following health disorders: birth defects, non-Hodgkin's lymphoma (a form of cancer), mitochondrial damage, cell asphyxia, miscarriages, attention deficit disorder, endocrine disruption, DNA damage, skin tumors, thyroid damage, hairy cell leukemia (another cancer), Parkinson disease, premature births, decrease in the sperm count, harm to the immune system in fish, death of liver cells, severe reproductive system disruptions and chromosomal damage. Opposing Views Attachment 9a contains the specifics of the research and scientists' names. Incredibly, you choose to ignore this science and justify the application of this poison with a single, outdated reference: 2005 Helena Forest Herbicide FEIS & ROD	

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Comment: The Responsible Official cites a single outdated document (2005 Helena Forest Herbicide FEIS & ROD to justify glyphosate safety yet Denmark, England, Italy, El Salvador and Sri Lanka have banned the use of glyphosate-containing herbicides. America's favorite weed killer could be the driving force behind some of modern society's most common health ailments, according to new research examining more than 300 studies. See: http://www.rodalesorganiclife.com/food/glyphosate-research **Comment:** There is no indication that the Responsible Official applied the precautionary principle prior to proposing glyphosate application. Here's the principle that any responsible person would apply to a decision that could have lethal consequences: *The precautionary principle or precautionary approach states that if an action or policy has a suspected risk of causing harm to the public or to the environment. in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is not harmful falls on those taking an action.* **Comment:** Willingly and knowingly taking action on land owned by other people that might cause birth defects, non-Hodgkin's lymphoma (a form of cancer), mitochondrial damage, cell asphyxia, miscarriages, attention deficit disorder, endocrine disruption, DNA damage, skin tumors, thyroid damage, hairy cell leukemia (another cancer), Parkinson disease, premature births, decrease in the sperm count, harm to the immune system in fish, death of liver cells, severe reproductive system disruptions and chromosomal damage is not something a caring, responsible, intelligent person would do. Here are several definitions of "manslaughter." **Merriam-Webster's Online Dictionary, 11th Edition**: the crime of killing a person without intending to do so. **Oxford Dictionary**: The crime of killing a human being without malice aforethought, or otherwise in circumstances not amounting to murder. **Collins Dictionary**: the unlawful killing of one human being by another without malice aforethought. Supervisor Avey, you are also subject to 18 U.S.C. § 1001. There are alternatives that eradicate unwanted vegetation. Is it worth it when there are effective alternatives?	

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Comment: There are other non-chemical alternatives for treating invasive, non-native plants. The Responsible Official does not analyze these alternative treatments, so of course the Responsible Official does not disclose why they were rejected or even what they are. **Comment:** Supervisor Avey, if after reading this information you still plan to apply Roundup, you will have planted the seed for cancer in a child that might visit the area on the forest where you sprayed the poison. Every day of your life you will wake up wondering: who is dying a painful cancer death because of my poor decision. **Comment:** I suggest you protect yourself by posting documents at campgrounds and entrances to the forest that indicate a herbicide containing the known carcinogen glyphosate has been applied and they should proceed at their own risk. You should also assure that the people who apply this poison (either contractor's employees or USFS employees) are aware they will likely come in contact with a cancer causing substance. Indeed, my letters to the editor that will be published in your local newspapers will point this out if you choose to ignore this warning. Are you a risk taker when people's lives are at stake? **Final Herbicide Comment**: Supervisor Avey this is not a trivial issue. You will be making a life or death decision. Not only are you consciously taking action that could cause a human death but you violate the Toxic Substances Control Act of 1976 (15 U.S.C. §2601 et seq.) Is it worth the risk? Competent, intelligent professionals would use the alternatives to noxious weed control. Nothing in your job description directs you to prop-up Monsanto. The increase in non-native vegetation is a major problem throughout America ... public and private land. Action must be taken to kill these plants and stop the spread. New research finding are being released. They all conclude glyphosate is likely or probably carcinogenic to mammals (including humans). **Supervisor Avey, I beg you. Don't let your conservatism allow the corporations to win this time. If you do, you will have set the stage for painful wildlife and human deaths later in their life. Don't worry, you won't be legally responsible, but it will remain in your mind forever. Monsanto (a corporation worth hundreds of billions $$$) has unprecedented influence over high ranking United States government employees. This includes the USDA and EPA. Didn't you ever wonder why Congress passed and President Obama signed the Monsanto Protection Act (H.R. 933)? See:**	

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http://rt.com/usa/monsanto-bill-blunt-agriculture-006/ **There are alternative ways for dealing with noxious weeds. Please use them.**	
Request for changes to be made to the final NEPA document: In the new NEPA document indicate in an easy to notice location in the Proposed Action description that "no glyphosate-containing herbicides will be applied" and indicate noxious weeds will be addressed using mechanical and biological means (instead of herbicides) in spite of the higher cost. **(8-20)** This is common sense. Please decide if you want to kill non-native invasive plants or fish and mammals (including humans).	**(8-20a)** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record.
Issue #12 -- Supervisor Avey, please respond to the opposing views contained in the Opposing Views Attachments to these comments to the comments. **Request for changes to be made to the final NEPA document**: Each opposing viewpoint is different and is related to a unique subject, therefore a single response attempting to deal with all opposing views simultaneously does not respond to opposing views as required by law. Please respond to each opposing view and post the responses online for the public to see. Simply placing a hardcopy of your opposing views responses in the project file located at the district hides the information from the American public. How will the judge react when he/she finds out you expected the public to drive thousands of miles to examine a document that legally must be available to the public?	**(LR-29)** Responses to comments on the Telegraph Vegetation Project Draft EIS will be posted to the web as part of the FEIS. This includes responses to each opposing view attachment.
Issue #13 -- The Proposed Action will clearly cause the resource degradation and destruction described in the ATTACHMENTS to these comments. The attachments to these comments present the "responsible" opposing views of between 500 and 600 independent, unbiased Ph.D. biological scientists who describe the resource damage caused by commercial timber sale logging and road construction activities that occur at any location, on any topography, at any elevation, at any time logging takes place. **Comment:** The Telegraph timber sale will cause major damage to non-vegetative natural resources described by over 400 scientists in the **Opposing Viewpoint Attachments**. Forging ahead with the timber sale with full knowledge of the likely resource	**(LR-30)** Responses to Opposing View Attachments are provided below. The Reference section of the FEIS contains literature used to inform the project's analysis.

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damage that the sale will cause indicates 1) weighing the relative value of the natural resources in the area against timber outputs has not been done, and 2) they have not been harmoniously coordinated. Also, since outdoor recreation, watershed, wildlife and fish are adversely affected by the sale, you obviously consider timber more important that these 4 other resources. **Request for changes to be made to the final NEPA document:** Include the source literature for particularly relevant science quotes contained in the Opposing Viewpoint Attachments in the References section of the final EIS and cite the quotes contained in the attachments in the body of the final EIS. Indeed, it makes sense for a public servant to present the public with the whole story which includes benefits and drawbacks of project implementation.	
Issue #14 --The DEIS does not discuss the items shown below (c) Possible conflicts between the proposed action and the objectives of federal, regional, state, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned. (See §1506.2(d).) (f) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures. (g) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures. (h) Means to mitigate adverse environmental impacts (if not fully covered under §1502.14(f)). [43 FR 55994, Nov. 29, 1978; 44 FR 873, Jan. 3, 1979] **Request for final NEPA document modifications: Please comply with the law by including (c) though (h) above.**	**(8-20b)** The DEIS and FEIS for the Telegraph Vegetation Project contain the following: Appendix B – Forestwide Standard, Forest Plan Consistency, and Management Area Direction; Design features and range of alternatives in chapters 1 and 2; and chapter 3 which contains analysis for various resources including a Heritage section.
Issue #15 -- Supervisor Avey, you have consciously selected literature for the References section that excludes science describing how logging will adversely affect non-timber natural resources in the sale area. Competent professionals who author scientific documents do not selectively choose literature to cite in their References section that supports their hypothesis and systematically exclude documents those that don't. Your hypothesis is: logging benefits the ecosystem by removing products without impairing the proper functioning of the potentially affected natural resources in the area.	Thank you for your comment. Responses to literature submitted by the commenter is provided throughout this document including the below sections.

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Comments: Supervisor Avey, there are no documents listed in your References section that describe the likely or potential natural resource harm, damage and impairment that might occur by constructing 8.5 miles of road and logging 6.1 square miles that are part of the Proposed Action. Please don't claim you tried but were unable to locate such literature. A WEB search of the words TIMBER ADVERSE EFFECTS LOGGING gets 2,330,000 hits. See for yourself: http://www.bing.com/search?q=timber%20adverse%20effects%201ogging&qs=n&form=QBRE&pq=timber%20adverse%20effects%201ogging&sc=0-23&sp=-1&sk=&cvid=e4548830f3cf4a34a71c3919ee83fa9c Clearly, you hoodwink and deceive the public by presenting only part of the story. Even random selection of science literature related to logging would have included a few science documents contained in the **Opposing Views Attachments**. None of this literature is listed in the References. **Comment:** Supervisor Avey, you were encouraged to sell the Telegraph timber sale by Mr. Neal, Ms. Scott, Ms. Milburn, Mr. Nunn and Mr. Bielecki. These individuals have financial interest in the sale. The quotes by the experts in **Opposing Views Attachments #1 and #4** describe the resource damage that logging at any location is at odds with the IDT claims the sale will benefit and restore the natural resources in the area. Anyone (including a judge) would agree that the research conclusion of hundreds of well respected scientists is best science, and trumps the need to sell timber by financially motivated USFS employees. Your proposal to offer the Telegraph timber sale in spite of the scientist's conclusion ignores best science, therefore you 1) violate the law, and 2) reject your responsibility to serve the recreating public. See below. "This uncertainty has affected the ability of the Forest Service to utilize fully the provisions of §219.35 paragraph (a) to consider the best science available in plan amendments and project decision making. For example, while population data have been held to be required for management indicator species under the 1982 rules, other tools often can be useful and more appropriate in predicting the effects of projects that implement a land management plan, such as examining the effect of proposed activities on the habitat of specific species; using information identified, obtained, or developed through a variety of methods, such as assessments, analysis, and monitoring results; or using information obtained from other sources such as State fish and	

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wildlife agencies and organizations such as The Nature Conservancy. The purpose of this interpretative rule is to clarify that, both for projects implementing plans and plan amendments, paragraph (a)'s mandate to use the best available science applies." 'The transition provisions as originally enacted, and now twice amended, explicitly refer to the 1982 planning rule as the rule "in effect prior to November 9, 2000." At the same time, given the extension of the effective date of paragraph (d), within which site specific decisions must comply with the 2000 planning rule (68 FR 53294), it is clear that site-specific decisions entered into during the transition period are not to comply with the substantive provisions of the 2000 planning rule. This interpretative rule clarifies that until a new final rule is promulgated, the transition provisions of the 2000 planning rule, as amended by the May 2002 interim final rule remain in effect, including the requirement of § 219.35 paragraph (a) of the transition provisions that responsible officials consider the best available science in implementing national forest land management plans and, as appropriate, plan amendments. Pursuant to paragraph (b), the provisions of the 1982 planning rule may continue to be used only for plan amendments and revisions upon election of the responsible official. Appropriate plan amendments and projects proposed during the transition period should be developed considering the best available science in accordance with § 219.35 paragraph (a)." **Federal Register** I Vol. 69, No. 188, page 58056 Wednesday, September 29, 2004 Rules and Regulations http://www.fs.fed.us/r1//projects/plan_rule/intrepretative-rule.pdf	
Request for changes to be made to the final NEPA document: Include some source documents from the **Opposing Views Attachments** in the References section of the final EIS. Also, cite the specific quotes presented for the source literature in the **Opposing Views Attachments** in the text of the EIS. The public deserves to be informed of this information so they can make an informed decision to support or oppose the timber sale based on complete data.	Literature submitted by the public during a comment period for the project has been reviewed and filed in the project record.
Issue #16 -- Supervisor Avey, your Proposed Action does not respond to the Purpose & Need. Therefore, it must be rejected.	**(8-20c)** The Telegraph Vegetation Project's Hydrology analysis in chapter 3 and in chapters 1 and 2 of the FEIS, various watershed improvement activities are proposed. A goal of this project is to improve water quality. Therefore, there is a need to reduce sediment

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There is no legitimate science that shows logging and road construction will "Maintain and Improve Watershed Values." Indeed, hundreds of scientists quoted in the **Opposing View Attachments** show your Proposed Action will significantly harm and damage the Watershed Values in the area. The References section contains no literature indicating logging and road construction will benefit Watershed Values. You knew there would be conflict on this issue before you started this pre-decisional EA. It's sad that volume accumulation is so important to you. Sometimes line-officers will try to convince the public their timber sale will improve a resource that will actually be degraded by logging and roading. This is done by falsifying the P&N as has been done here. It disappoints me that each IDT member allowed themselves to participate in this dishonest public deception.	delivery to streams by conducting various road treatments and stream crossing improvements. These activities specifically address the Helena National Forest Plan forestwide management direction to "Maintain high quality water to protect fisheries habitat, water based recreation opportunities, and municipal water supplies and to meet or exceed state and Federal water quality standards". Also, the general watershed guidance under the forestwide standards guides the forest in correcting problems with soil erosion; mitigating adverse effects on water-related beneficial uses; and controlling non-point pollution sources. Overall, watershed improvement activities would be a benefit to watershed values in the project area in the long-term.
Request for changes to be made to the final NEPA document: Analyze another alternative in detail that will really benefit Watershed Values. **(8-21)**	**(8-21)** There is no context to this comment as in terms of what an alternative would proposed differently that will "really benefit Watershed Values" than what is already proposed under the action alternatives analyzed in this FEIS. Therefore, a new alternative was not developed.
Issue #17 -- Supervisor Avey, not only are you breaking the law with the DEIS for the Telegraph timber sale, but you and your IDT members violate the public trust by using their money for personal gain. Tragically, your proposed forest plan Amendment is a direct assault the recreating public. What sort of person does this to the people who pay their salary? Is this a clinical disorder or the outcome of institutional mind control? You will: 1) waive the standard that prevents removing big game thermal cover in winter range, and 2) waive the standard that limits the opening size associated with clearcuts in winter range. Not only is this "management for corporate benefit at the expense of the public", but ignoring Dr. Cohen's methods to reduce fire damage risk should a wildfire occur is criminal (emphasis added). Avey, you see multiple pictures of burned-out homes on TV and in the newspapers each day during this unusually severe wildfire season. If you don't change your ways you will be responsible. Did you ignore the recommendations given to you by Ms. Morrissey or is she a timber sale enabler masquerading as a recreation specialist. Any self-	Thank you for your comment.

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respecting, competent recreation specialist would not have allowed their good name to appear as an IDT member. Supervisor Avey, Congress promulgated the NFMA which required the USFS to prepare forest plans. The law directed USFS line-officers to manage the public land according to the plans. This meant the USFS line-officers would not propose projects knowing at the outset that it does not comply with the "must-achieve" forest plan standards. **Comment:** Congress knew things are not static over time so they codified a process to amend the forest plan when certain conditions exist. They wanted USFS decision- makers to amend the plan to adjust management to respond to changed conditions such that future projects would not harm the natural resources. The forest plans told the public how their forest would be administered and the types of actions that would occur and not occur. Congress assumed that USFS Responsible Officials would be honest with the public when explaining why an amendment is needed. This includes project-specific, non-significant amendments. Does the opening paragraph of your forest plan tell the public all proposed projects will comply with forest plan standards unless the Responsible Official must violate a standard to "get-out-the-cut?" This is clearly the case here. Congress passed the NFMA which required the USFS to prepare forest plans with the assumption that USFS line-officers would comply with the standards in the plan. Congress didn't anticipate there would be USFS decision-makers like you obsessed by volume accumulation. Indeed, it's still possible to get some volume without violating the forest plan. **Comment:** The Forest Plan is a contract with the public. NFMA contains a process to amend the forest plan for individual projects to maintain ecological integrity of the area if conditions had changed since the forest plan went into effect. Amending the Forest Plan to allow resource damage to occur in order to make it possible for you to implement a commodity output project with no ecological benefits is unacceptable to the vast majority of Americans. I suggest you read NFMA from beginning to end. **Comment:** We both know USFS decision-makers (and their supervisors) abhor bad press. We both know the Helena National Forest is owned by 314 million Americans. We both know only a handful of these Americans take the time to read USFS NEPA	

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documents, thus you believe you can cause ecosystem harm to with impunity. Therefore, if your site-specific forest plan amendment proposal appears in the final EIS it will be necessary to tell the public in your area the truth behind your actions. My letter to the editor will suggest that the public contact you Supervisor Avey and ask why you believe volume accumulation is a higher priority to you than protecting and conserving the natural resources in the forest. **Indeed, it sells newspapers when they contain articles about corrupt Federal agency employees who use taxpayer dollars to prepare projects that provide opportunities for corporations to reap profit at the expense of the public** Start reading the Helena Independent. You will become famous in 1 day. How many people in Helena Montana will approve of you trashing the Helena national forest to please the corporation that purchases the sale? You have been taught WUI sales are extremely important to sell. Don't kid yourself. If you really believe human lives are more important than corporate profit you would have analyzed a Dr. Cohen alternative in detail. The more lies there are, the more difficult they are to sweep under the rug. The court of public opinion is often more effective than a court of law. Honor your contract with the public. Your reputation in the community will not be tarnished.	
Request for changes to be made to the final NEPA document: Abide by your current forest plan and forget your plans to amend it. **(8-22)**	**(8-22)** The *Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area* was signed on March 2, 2016, and the amended standard described in that decision replaces standard 4a analyzed in the Telegraph DEIS.
The children born 50 years from today will not appreciate the ecological plunder caused by this timber sale. Most Americans want future generations of kids to have the opportunity to experience the quietness and solitude in a real, undeveloped forest. This will become more important in 2050 when the predicted population of the United States will be 438 million people. The wild UNDEVELOPED national forests will provide one of the only escapes from the insanity of a world driven even more by money than it is now. The Telegraph sale will take away more undeveloped national forest acres from the legacy the unborn kids of the future deserve. The IDT	Thank you for your comments.

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members should be ashamed to assist with such a plunder. Comment: Which is most important: the future kids of America or another summer home for the CEO of a timber extraction corporation? Most people won't stand for being deceived by people who accept their tax dollars while simultaneously trashing their land for corporate benefit. Please don't deny that this sale does not cause ecosystem damage. To do so you must refute the statements of the many unbiased, independent scientists quoted in the Opposing Views Attachments. Most people won't stand for being deceived by people who accept their tax dollars while simultaneously backhanding them for corporate benefit. Is spending all of your NFTM dollars and meeting volume expectations this FY really that important? Supervisor Avey, the press will become acquainted with the damage you propose to inflict to the Helena National Forest that are described in these comments. Articles describing how the USFS proposes to maim and ravage this public land will sell newspapers. Supervisor Avey, when I send hardcopies (and emails) of these comments to the Helena Independent and Missoulian you can be sure they will publish a feature article detailing how you plan to trash the natural resources (and recreation opportunities) in the Telegraph timber sale area to provide opportunities for short-term profit for natural resource extraction corporations; Who are these IDT members who so obediently turn belly-up to corporate America and still feel good about themselves? Avey, of course the primary reason you are proposing this sale is personal. You know you must not have a penny of unspent NFTM money at the end of the fiscal year to assure next year's budget won't be reduced, and you know you must display your capability to remove volume (a.k.a "get out the cut") to maintain your promotion potential in an agency with a timber agenda and culture. Your IDT witlessly and gleefully assists you. By now you may have read the information contained in the Opposing View Attachments. Reasonable people would have doubts about the wisdom of their proposal that is likely to create major adverse impacts to their resources as described by hundreds of Ph.D. scientists. Responsible people that contemplate any action intuitively engage the Precautionary Principle.	

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Perhaps you have never heard of it. Here it is in a nutshell: The precautionary principle or precautionary approach states that if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus that the action or policy is not harmful, the burden of proof that it is not harmful falls on those taking an action. See: http://en.wikipedia.org/wiki/Precautionary_principle **Comment:** Supervisor Avey, when Mr. Neal, Ms. Scott, Ms. Milburn, Mr. Nunn, Mr. Bielecki, Ms. Moser, Mr. Nolan, Mr. Oaks, Ms. Pengeroth, Ms. Rief, Ms. Spencer, Ms. Morrissey, Ms. Hendrix, Ms. Goude, Ms. Coleman, Ms. Cikanek, Ms. Carsey, Mr. Callery, Mr. Beagley, and Ms. Alvino disagree with several hundred scientists does this constitute "scientific consensus?". How will you explain this to the reporters? Please don't take inappropriate action that harms the recreating public just because the USFS says you can. Supervisor Avey, as you and your IDT will find out, the Opposing Views Attachments contain the wisdom of several hundreds Ph.D. scientists who all agree that logging and reading the forest will inflict major adverse ecological impacts. They show how the passing of time without human manipulation is the only way to bring these logged areas back to health in spite of the fact you tell claim this timber sale will create a healthy forest and "restore" the natural resources in the area.	
A sample of the opposing views from the **Opposing Views Attachments** is included below. Please meet with your IDT and discuss each science statement. Let them know the meeting will be open and honest and they should not be afraid to express their feelings. I'm sure some members of the IDT are familiar with the work these scientists have produced: E.O. Wilson, Chris Maser, Jerry Franklin ... and Aldo Leopold. Each of your IDT members will be receiving a copy of these comments. If you fail to approach them and offer the meeting they will know you were afraid to discuss the values of the majority of Americans so well articulated by the scientists quoted below. An intelligent, curious person who is unafraid will dwell on the wisdom below. **1)** "Human beings and the natural world are on a collision course. Human activities inflict harsh and often irreversible damage on the environment and on critical resources. If not checked, many of our	**(LR-31)** Numerous excerpts from Opposing Views Attachments are provided here and provide examples of different philosophical approaches to natural resource management. Response to the commenters Opposing View Attachments for those listed in that section are provided below. Overall, the literature provided is considered in light of the Telegraph Project.

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current practices put at serious risk the future that we wish for human society and the plant and animal kingdoms, and may so alter the living world that it will be unable to sustain life in the manner that we know. Fundamental changes are urgent if we are to avoid the collision our present course will bring about." **Union of Concerned Scientists** **2)** "The primary goal of resource management (sustained yield) evolved from the utilitarian values of the Progressive Era. Intuitively, sustained yield is a logical and laudable goal: no more is taken than can be replenished. As it has come to be implemented, however, the concept of sustained yield has been modified to mean taking the maximum supply a system can withstand (i.e., the furthest point to which production can be pushed without impairment of the resource's ability to reproduce). One of our colleagues calls this 'management at the edge of harm'." **Hanna Cortner and Margaret A. Moote in The Politics of Ecosystem Management** **3)** "Nature designed forests to live 100 to 5000 years. We are designing a forest to live between 60 and 120 years. Nature continually regenerates diverse forests of single and multiple tree species (usually between one and 10 tree species) including plants, animals, micro-organisms and fungi. We design forests of single and multiple tree species (often planting two or more tree species on the same site) leaving regeneration of other components of the ecosystem to nature. Nature designed some forests to be connected, and others to be disconnected, "in space and time over vast landscapes." We are designing fragmented forests disconnected in space and time on clearcut patches. Nature designed a forest to be self-sustaining, self-repairing. We are designing a forest to require external expenditures and subsidies, watershed restoration, brushing, spacing and fertilizers." **Anthony Britneff, RPForum, Oct 97** **4)** "The one process now going on that will take millions of years to correct is the loss of genetic and species diversity by the destruction of natural habitats. This is the folly our descendants are least likely to forgive us." **E.O. Wilson** **5)** "Evidence points to a common cause behind past failures of investments in sustainable development. Historically, the management of forest, rangelands, fisheries, and wildlife resources was dominated by	

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theories of carrying capacity and goals of sustainable yield. Human behavior was ignored. The application of these theories led to the expectation that target variables such as employment could be stabilized and created a demand for a constant flow of product. These policies were successful initially, and profit and employment were, in fact, stabilized. But their very success resulted in slow changes in key ecological, social, and cultural components not captured in the management models: changes that typically led to the collapse of the entire system. The "economic extinction" of cod along the coast of eastern North America is a prime example. From a review of a wide range of failed sustainable development initiatives, a common pathology emerges. At the extreme, the ecological system loses resilience, the industries become dependent and inflexible, the management agencies become rigid and myopic, and the public loses trust in governance." **C.S. Holling, Dec 2000** **6)** "The instrument, the knife, that carved out the new, rudimentary forest was the razor-sharp interest in the production of a single commodity. Everything that interfered with the efficient production of the key commodity was implacably eliminated. Everything that seemed unrelated to efficient production was ignored. Having come to see the forest as a commodity, scientific forestry set about refashioning it as a commodity machine. Utilitarian simplification in the forest was an effective way of maximizing wood production in the short and intermediate term. Ultimately, however, its emphasis on yield and paper profits, its relatively short time horizon, and, above all, the vast array of consequences it had resolutely bracketed came back to haunt it." **James C. Scott in Seeing Like a State** **7)** "Ecological forestry that maintains an effective coarse filter differs markedly from the 'engineering' approach common under sustained-yield timber management. Under that model, foresters try to define precise objectives for specific ecosystem components (e.g., trees, water, habitat for a particular endangered species) and use sophisticated quantitative methods to determine optimal management strategies. Though it can be considered appropriate for certain narrowly defined problems, we believe that there is a certain arrogance to such an approach to managing forests for biodiversity. It assumes a near-perfect understanding of the ecosystems under management." **Robert Seymour and M.L. Hunter in their book Maintaining Biodiversity in Forest Ecosystems** **8)** "Two broad schools of thought exist regarding landscape planning. In one, future landscape	

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patterns are described in specific desired products (e.g., wood fiber, habitat) and known ecosystem processes. The theme can be summarized as 'we know what we want and we know how to get it'. In the other approach, future patterns are based upon historic patterns to the degree feasible. This point of view reflects the fact that we cannot even name all the species in the landscape, much less rationally plan for their habitat needs and ecosystem functions. A premise of this approach is that native species have adapted to the disturbance events and resulting range of habitat patterns of the past thousands of years. The probability of their survival is reduced if their environment deviates substantially from the range of historic conditions." **Cissel, Swanson, McKee and Burditt Journal of Forestry** **9)** "Current standards represent the protection of environmental and cultural values as constraints on managing the timber resource. Current standards do not effectively integrate ecosystem and cultural values. Nor do they adequately address requirements for ecosystem sustainability, harmonious stewardship of all resources, and the needs of future generations. Historical approaches to forest management have focused largely on products rather than on the biological systems from which these products derive. In Clayoquot Sound, as elsewhere in British Columbia, sustaining timber production has historically taken precedence over maintaining forest ecosystems. The Panel believes that forests should be managed as ecosystems, rather than as potential products, and that forest practices should not put at risk the long-term health of forest ecosystems. 'Sustainable ecosystem management' is characterized by resource management practices that are scientifically based, ecologically sound, and socially responsible. The Scientific Panel's recommendations are among the first efforts taken to shift forestry from its historical focus on sustaining output levels for specific forest products, to a focus on sustaining forest ecosystems." **Clayoquot Sound Scientific Panel** **10)** "If we choose to continue our current patterns of use, we face almost certain declines in the ability of ecosystems to yield their broad spectrum of benefits ... from clean water to stable climate, fuelwood to food crops, timber to wildlife habitat. We can choose another option, however. It requires reorienting how we see ecosystems, so that we learn to view their sustainability as essential to our own. Adopting this	

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"ecosystem approach" means we evaluate our decisions on land and resource use in terms of how they affect the capacity of ecosystems to sustain life, not only human well-being but also the health and productive potential of plants, animals, and natural systems. Maintaining this capacity becomes our passkey to human and national development, our hope to end poverty, our safeguard for biodiversity, our passage to a sustainable future." **in People and Ecosystems: The Fraying Web of Life by the World Resources Institute** **11)** "Nature designed a forest as an experiment in unpredictability. We are trying to design a regulated forest. Nature designed a forest of long-term trends. We are trying to design aforest of short-term absolutes. Nature designed a forest with diversity. We are designing a forest with simplistic uniformity. Nature designed a forest with interrelated processes. We are trying to design a forest based on isolated products." **Chris Maser in The Redesigned Forest** **12)** "One of the most fundamental lessons of the last several decades of ecological research is that the biological diversity of North American forests is far greater than previously thought. At the same time, much more is at risk through traditional forestry programs then ever imagined. Perhaps nowhere has this been more pronounced that in the debate over the fate of the remaining old forests of the Pacific North- west." **Bruce Marcot in Creating a Forestry for the 21st Century** **13)** "Limiting the periodic harvest of a renewable resource to its periodic growth is the fundamental dictum of sustained yield, but it can take at least two forms. The benign and conservative form sets the harvest level according to the spontaneous (some might say 'natural') periodic increment of the resource. A bolder, more vigorous approach applies capital to the resource, to stimulate production 'artificially'. This approach holds an immense appeal to resource managers with exaggerated anxieties about scarcity, and it appeals immensely to those of the Type A, cabbage-patch, persuasion. Maximum sustained yield would be limited only by the biological capacity of the land to absorb productive capital inputs. "As the second half of the twentieth century got underway, the bold form of sustained yield was pursued enthusiastically by the federal resource agencies. After WW11, the budget floodgates of public capital opened, and the maximizers of sustained yield went on a binge of dam construction, rangeland 'improvement', recreational facilities	

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development, road building, and clear-cutting. Single-resource agencies, cheered on by their single-resource clientele groups undertook Type A management activities with unprecedented capability. "Labeled 'intensive management' in the Forest Service, the enthusiasm led to 'a conspiracy of optimism' as historian Paul Hirt described the period. What timber management meant, in the post-war years, was the conversion of complex biological systems, the old growth forests of the West, into simplified timber plantations." **Richard W. Behan in Plundered Promise** **14)** "The primary goal of resource management (sustained yield) evolved from the utilitarian values of the Progressive Era. Intuitively, sustained yield is a logical and laudable goal: no more is taken than can be replenished. As it has come to be implemented, however, the concept of sustained yield has been modified to mean taking the maximum supply a system can withstand (i.e., the furthest point to which production can be pushed without impairment of the resource's ability to reproduce). One of our colleagues calls this 'management at the edge of harm'." **Hanna Cortner and Margaret A. Moote in The Politics Of Ecosystem Management** **15)** "If 20th century forestry was about simplifying systems, producing wood, and managing at the stand level, 21th century forestry will be defined by understanding and managing complexity, providing a wide range of ecological goods and services, and managing across broad landscapes...managing for wholeness rather than for the efficiency of individual components." **Kohm and Franklin in Creating A Forestry For the 21th Century** **16)** "Sustainable forestry will not result from lengthening rotations on tree farms and preserving a few small areas for display of other forest qualities. The evolution to sustainable forestry requires, at a minimum, a recognition of the limitations of present knowledge and of the risk that human intervention will do irreversible harm before enough knowledge accumulates to identify the practices of sustainable forestry. This recognition leads to a double strategy: 1) intensify research on how forest systems work and 2) preserve options for the future. Preserving options implies stopping policies that are doing harm by destroying watersheds, biological diversity, scenic beauty and other forest values. It means developing new forest management	

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techniques that give far less weight to the present and more to the future and less weight to wood production and more to other values." **Alice Rivlin in Defining Sustainable Forestry** **17)** "The concept of conservation ecology is often limited to a protectionist agenda: buy, fence, and lock up as much as possible of the natural world. But fences rot and locks rust. Arbitrary lines drawn on a map have always faded in time; just ask a Cherokee. The critical challenge for science, and our species, demands that we abolish intellectual barriers, crush limited paradigms, and take the broadest possible view of the problem." **O'Neill, Kahn, and Russell** **18)** "In a sense, the need for integration is also the lesson of the old paradigm's failure. The paradigm failed because it oversimplified a complex reality. It is still not clearly understood that the oversimplification took two forms. First, the sustained yield paradigm failed to understand the complexity of forest ecosystems, systematically downgrading the mounting evidence of soil erosion, biodiversity loss, and disappearing habitat as so many anomalies to be handled by doing better in future. Second, it failed to come to terms with the fact that sustainability is as much a social as an ecological problem. Sustained yield forestry is only a problem to the extent that it fails to provide us with what we want from our forests. It continues to be defended precisely because it is providing some people with exactly what they want." **Jeremy Rayner, Implementing Sustainability in West Coast Forests in the Journal of Canadian Studies** **19)** "EM (ecosystem management) technology will probably emerge as more important to people than either the technology of the communications revolution or biotechnology, because of its potential usefulness in guaranteeing a livable environment." **John Gordon, Yale University** **20)** "Decisions made when the sustained yield paradigm was established after the Second World War set British Columbia on a path that has been and will continue to be extremely costly and disruptive to reverse." **Cashore et al., Change and Stability in BC Forest Policy from In Search of Sustainability** **21)** "To illustrate how inadequate existing knowledge has been, consider the important discoveries of the last 25 years with regard to:	

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1) the extraordinary dynamics of the below-ground subsystem and its high energy requirements; 2) the importance of the dead tree and its derivatives in the long-term functioning and habitat diversity of forests, streams, and rivers; 3) the scale and complexity of edge influences that can be created through forest harvest practices; and 4) the importance of biological legacies, living and dead, in ecosystem recovery following catastrophic disturbances, and the poor match in conditions and processes between most natural disturbances and clearcutting. This is just a small sample of recent scientific insights into forest ecosystems. In fundamental ways, each of these findings alters our view of these forests and how they work. We simply did not understand some very basic aspects of forest structure and function. Consequently, traditional forestry approaches, based on a very simple view of a forest, have proven very inadequate. Resource managers thought that they could grossly simplify forests without consequence. They have done so on a grand scale, and often react energetically against adoption of alternative models of how forest ecosystems work. There is no question that recognizing the potential ecological value of a dead tree makes life much more difficult (or, put another way, more interesting) for the silviculturalist. Perhaps as important, it challenges the basic value set for foresters, many of whom share a strongly utilitarian view of the forest." **Jerry Franklin in Conservation Ecology** **22)** "Sustained yield is not the same thing as sustainability. You could produce a sustained yield of timber (for several rotations anyway) without practicing sustainable forestry. Managing for a consistent and sustained supply of one commodity does not ensure that all other commodities and values will be maintained. Nor is the concept of sustained yield particularly appropriate for forests as ecosystems. Even if one includes all known non-timber forest products and all aspects of 'wildcrafting', most components of forest biodiversity are not harvestable resources. Nevertheless, natural resources have continued to be managed (or mismanaged) under the rubric of sustained yield in one form or another, and the histories of forestry, fisheries, and wildlife management show similar patterns [of resource depletion]." **Pojar et al. in Si/vicultural Options on the Central Coast draft BC MoF, 1999**	

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23) "When systems are pushed outside the bounds of natural variability, there is a substantial risk that biological diversity and ecological function. will be jeopardized and therefore, ecological systems will not be naturally maintained." **Ayn Shlisky Journal of Forestry** **24)** "Forestry has been largely concerned with silviculture, defined as "that branch of forestry which deals with the establishment, development, care, and reproduction of stands of timber" (Tourney 1947). The aim of silviculture, according to Tourney, is the "continuous production of wood". But forests comprise much more than wood and other products for human consumption, much more even then the "public service" functions of climate regulation, water supply, pest control, gene banks, or recreational opportunities. What future generations can afford to lose is not the only consideration. Forests are valuable and must be sustained for their own sake. Until we acquire such an attitude, the sustainability concept may just be a smoke screen, behind which we continue to chip away at our biotic heritage." **Reed Noss in Defining Sustainable Forestry** **25)** "The agricultural paradigm of forestry adopted in this century (simplification and uniformity in structure, pattern, and product) and the regulated landscape (fully occupied by an ordered age sequence of managed stands) no longer suffices. The simplistic notion that four regeneration harvest practices, designed with the knowledge and objectives of the 19th century, can meet the objectives of the 21st century must be given up." **Kohm and Franklin in Creating a Forestry for the 21st Century** **26)** "Sustained yield and sustainable development are unquestionably in conflict. Attitudes, policies, and management strategies that evolved to serve the sustained yield ideal are, in many respects, outmoded. Sustainable development demands that timber primacy be replaced by a concern for a forests' contribution to human welfare in the broadest sense. The emphasis must shift from maintaining timber supplies over the long run to maintaining a multitude of resource values that are dependent upon site productivity, ecosystem, ecosystem health, integrity, and diversity." **David Haley and Martin Luckert in Managing Natural Resources in BC** **27)** "Sustaining the yield of a single resource is based on the concept of equilibrium. That is, balance between growth and harvest can be sustained in perpetuity. However the sustained yield idea simply does not fit contemporary circumstances. A different	

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paradigm of forest management is required in a society: • where change is ubiquitous, • where change is rapid and encouraged, • where a scarcity of wood products has failed to materialize, and • where the forest is appreciated for an array of commodity and amenity values." **R.W. Behan Journal of Forestry** **28)** "On a net basis, the forest-planning adventure has been disastrous. Achievements have been grossly outweighed by the environmental, social, managerial, and political damages and costs. Indicting the Forest Service for this travesty of professional management and public administration is indeed inescapable ... but it is also insufficient. Also at fault is the obsolete paradigm of professional forestry based on producing a maximum sustained yield of timber. Maximum sustained yield of timber might well be called the forestry of the 20th century - and it differs little from the 19th or 18tn." **R.W. Behan in Creating A Forestry For The 21st Century** **29)** "The major change in forestry thinking wrought by Ecosystem Management has been the abandonment of the concept of a stable flow of wood from the land as a universally dominant management objective. As an environmental paradigm replaces utilitarian, conservation, and preservation paradigms in land managers' and the public's view of the landscape, the management of whole systems for a variety of purposes rather than commodity flows or single resources (including "wilderness") will become increasingly overt and explicit. Ecosystem Management will differ from multiple-use management in focusing on inputs, interactions, and processes, as well as uses and outputs." **John C. Gordon, Yale University** **30)** "A student of forestry in the 1950's or 1960's would have found information on converting old-growth stands into even-aged regulated forests, preventing and suppressing fire, creating habitat for game species, or calculating optimum rotations. Little mention was made of institutional or social issues. The forester of the 20th century could go to his post in the woods, plan for a sustained flow of timber, mitigate the negative effects of harvesting, provide for other values where possible, and feel secure in the knowledge that he had carried out his professional duties. Of course, the 21st century will not be such a time."	

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Katherine Kohm and Jerry Franklin in Creating a Forestry for the 21st Century **31)** "The growing demand for forest products led the government to quickly take measures to manipulate the forest cover to obtain more wood or to justify larger harvests. To attain increased productivity, forest policy tried to change to make industry more responsible in exploiting the forest in a manner that redistributes the stock of trees on its areas. Under the mechanical interpretation, harvesting the forest is to be structured in such a way that after a transition period, average annual growth is maximized. This is what is meant by 'normalizing the forest.' The policy has two objectives. One is always to try and support industry. The second, however, is to ensure that the commercial forest has the maximum quantity of available wood for harvesting. The forest becomes a variable factor of production. The 'normal' forest, where each age class of tree occupies the same space over time, is the desired goal because it represents a condition of social stability and maximizes all the functions of the forest. This model of a normal forest raises a number of questions. The idea that an even flow of wood could stabilize human communities betrays, once more, a lack of understanding of economics. Normalization does not take into account the profit motive of mills, where the wood is transformed, although the pursuit of profit is a basic rule of business. We find rhetorical and mysterious the assertion that the normal forest would eventually lead to a situation in which all the functions of the ecosystem are optimized. It does have the trappings of an ecosystem approach. Nevertheless, in our view, the objective of the normal forest, or the normalization of the forest, is merely an elegant way to justify an increase in allowable cuts without increasing the responsibilities of industry." **Luc Boutillier in Howlett, ed CANADIAN FOREST POLICY** **32)** "Principle 1: Sustain healthy, diverse, and productive ecosystems in the long term. A key lesson of the 1980's was that a national forest or grassland is much greater than the sum of its multiple uses. People demanded that management goals and objectives go beyond the yields of board feet of timber, user days of recreation, animal-unit-months of grazing, and other "multiple use outputs" projected in the endless tables and graphs within forest plans. For too long, federal land use managers had been treating natural resources "as discreet entities, focusing on their economic value and paying little attention to underlying natural systems and processes"(Keiter 1990). This first principle suggests an important corollary for multiple-use management: the key to sustaining all benefits is in managing for ecosystem health.	

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Earlier, it was assumed that land would be taken care of as long as management succeeded in sustaining yields of the various multiple uses. It is now recognized that ecosystem health must be a conscious and deliberate goal as well as the over all context for multiple use management." **Winnifred Kessler and Hal Salwasser in A New Century for Natural Resources Management** **33)** "Tensions over ecosystem management are at their starkest in cases where environmentalists and their allies contend that harvesting plans endorsed by the industry and other parts of the development coalition involve a rate of logging too high to allow protection of ecosystem characteristics. Anxious to maintain harvest levels, the industry and its supporters usually adopt as their first line of defense a set of responses based upon the sustained yield ... multiple use (integrated management) discourse that was employed to legitimate operations through out the 1970s and 1980s. Industry spokespersons argue that their harvesting practices are designed to sustain the timber supply and protect other important forest values such as wildlife, viewscapes, and riparian zones. Where this response fails to neutralize pressure for ecosystem management, industry interests usually begin to explore what might be referred to as 'old wine in new bottles' strategies. Typically these combine symbolic maneuvering with limited substantive concessions. Elements of the ecosystem management discourse are incorporated into rejigged defenses of the practices, and if necessary, these practices are adjusted with an eye to convincing at least the undecided portions of the attentive public that these constructions are credible. Throughout this exercise, industry interests try to create and capitalize on the ambiguity surrounding ecosystem management concepts, hoping to maintain a set of meanings loose enough to allow limited modifications of the practice to be sold as a genuine response to new ideas. Ultimately, the development coalition aims to neutralize pressures for policy change by winning support for the claim that it has brought practices into line with the standards embodied in the ascendant discourse." **Jeremy Wilson in Howlett, ed CANADIAN FOREST POLICY** **34)** "As conceived in the Multiple Use and Sustained Yield Act, within the limits set by ecological sustainability, land and resource planning was to seek the achievement and maintenance in perpetuity of high levels or regular periodic outputs of the various renewable resources of the national forests. Two realities make this approach problematic. First, the dynamics of ecosystems means that scheduling a regular, predictable output of a single product probably will fail because productivity varies through	

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time. For example, experience has shown the difficulty of achieving even flow when management focuses upon maintenance of a high level of production of a short list of outputs (such as wood fiber and forage). Second, an even flow can be sustained under variability, but it often comes by over-exploiting the system's productivity (e.g., by harvesting more than is produced annually) or by impairing other ecosystem elements (e.g., grazing under conditions that cause erosion). When managed this way, National Forests appear to promise a stability of commodity flow that they can not deliver, and public expectations are raised about the long-term capability of the land and likely resource flows. At the extreme, forests managed this way become subject to catastrophic surprises when unusual, but natural, events occur (e.g., greatly increased flooding and landslides during heavy rains). Communities that grow dependent on artificially high or constant commodity flows can eventually suffer the same catastrophic surprises ... losing all semblance of sustainability." **Committee of Scientists Third Draft Preliminary Report, July 98** **35)** "From the inception of American forestry in the late nineteenth century, foresters saw old growth as an obstacle in the way of the ultimate goal of forestry: to achieve a fully regulated forest producing desired goods and services efficiently and without waste. Foresters hoped to convert old growth as quickly as possible to thrifty, young, growing forests. This remarkably enduring perspective remained largely unchallenged within the forestry profession until the 1980's, even though for decades many non-timber-oriented resource management professionals defended the positive values of old growth. Greatly outnumbered in the forestry schools, the timber industry and government agencies, these dissenters remained on the margins of policy debates until the 1980's." **Paul Hirt in Institutional Failure in the U.S. Forest Service** **36)** "There are currently many plans for sustainable use or sustainable development that are founded upon scientific information and consensus. Such ideas reflect ignorance of the history of resource exploitation and misunderstanding of the possibility of achieving scientific consensus concerning resources and the environment. Although there is considerable variation in detail, there is remarkable consistency in the history of resource exploitation: resources are inevitably overexploited, often to the point of collapse or extinction."	

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Carl Walters, Donald Ludwig, and Ray Hilbor **37)** "A good example of a policy that might be portrayed as precautionary, but is not and should be reformed, is the traditional approach of taking the maximum sustainable yield (MSY) from a fishery. The MSY approach to managing fisheries involves creating a bell-shaped curve to determine the total advisable catch of a targeted stock. In theory, as long as the catch remains on the ascending side of the curve, increased fishing will yield a larger sustainable take. But once the catch moves to the downside of the curve, more fishing will mean less catch because of undue thinning of the population's ability to replenish itself. Managers thus strive to remain at the peak of the curve, known as the MSY plateau. Yet it has been shown time and again that MSY is very difficult to predict and that damage is done by overfishing. Commercial fish populations fluctuate considerably, and often unpredictably, because of ever-changing ocean conditions. Meanwhile, industry attempts to stay at the peak of a historically determined MSY curve have led to dramatic collapses. Rather than give due regard to conservation for the long term, MSY management practices seek to maximize short-term exploitation of the sea." **Wilder, Tegner and Dayton** **38)** "Those advancing anthropocentric (or softer, less biocentric) definitions (of ecosystem management) are criticized for offering a na'ive, 'we can have our cake and eat it too' position that dilutes ecosystem management into something closely resembling discredited concepts such as multiple use and integrated resource management. It is easy, critics say, to 'cheery pick' a few elements from the list of ecosystem management goals and principles. Full and genuine adoption of this list, however, would require and/or entail a comprehensive package of changes, a 'seismic shift' in mindset that would overturn assumptions and practices based upon utilitarianism and the 'commodity forest' and replace them with ones based on a Leopoldian land ethic and the 'environmental forest'. Out would go the tacit assumptions underlying traditional resource management practices including earth as a resource for humans, competition over cooperation, control in place of adaptation, viewing all problems as soluble, and viewing nature as stable or balanced. In would come contextual thinking, management premised on complex conceptions of ecological and organizational systems, and new approaches 'based upon the science of surprise, complexity and non-linearity."	

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Jeremy Wilson in Howlett, ed CANADIAN FOREST POLICY **39)** "In my own field, forestry, group A is quite content to grow trees like cabbages, with cellulose as the basic forest commodity. It feels no inhibition against violence ... its ideology is agronomic. Group B, on the other hand, sees forestry as fundamentally different from agronomy because it employs natural species, and manages a natural environment rather than creating an artificial one. Group B prefers natural reproduction on principle. It worries on biotic as well as economic grounds about the loss of species like chestnut, and the threatened loss of the white pines. It worries about a whole series of secondary forest functions: wildlife, recreation, watersheds, wilderness areas. To my mind, Group B feels the stirrings of an ecological conscience." **Aldo Leopold in A Sand County Almanac** **40)** "Preservation of future stewardship options is rarely possible when current rates of resource exploitation are high. Preserving options assumes an acceptable "decision space" will be available to address the environmental problems confronting future human generations. However, many forest and range ecosystems have experienced intensive resource management and utilization by Euro-Americans with adverse effects on their productive potential. The most significant changes in these systems have occurred over the last 200 years. For example, in forested systems most of the old-growth has been converted to younger stands, extensive road systems have been built with outdated technologies based on unsustainable levels of resource use. In rangeland areas, alterations to riparian systems and stream channels has been extensive, a consequence of historical watershed and riparian management practices. In either of these situations, future stewardship options have been reduced or, in some cases, essentially eliminated. While current stewardship activities can potentially reduce (sometimes increase) future options, if these practices significantly and adversely affect other resources or values, then they are also likely to significantly limit future options. If current practices result in species becoming threatened or endangered, water quality standards being exceeded, or public values and trust violated, then dramatic readjustments to current stewardship activities are clearly needed. Preserving options is also a way of explicitly acknowledging our incomplete knowledge of complex ecosystems - that is, our ignorance of how they function and their interactions with natural and human influenced disturbance regimes and our responsibilities to future human generations. This	

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philosophy is perhaps best encapsulated by focusing more on what we leave behind in exploited ecosystems than on what is taken from them." **Committee of Scientists Third draft Preliminary report, July 98** **41)** "Increasingly, after World War II, the assumptions foresters adopted regarding these myriad considerations shifted first toward the ever-optimistic and finally to the improbable. Those altered assumptions produced a watershed change in forest management an aggressive approach appropriately labeled "intensive management" and advocated in an important document produced by the Forest Service in 1969 titled the Douglas-fir Supply Study. The philosophy of intensive management lent a fayade of rationality to a timber program that was, in fact, driven by markets and unsustainable over the long haul. Intensive management ideology also deflected, to an extent, criticisms of the Forest Service by non-timber resource users. Intensive management promised more of everything: more commercial resource extraction and more recreation, more logging and more wildlife. Intensive management also promised to mitigate any resource damage due to development. Unfortunately, these hopeful visions often failed to pan out for lack of funding or because of irresolvable conflicts between uses or simple environmental limitations. Still, as long as the agency promised more and better management, it could elicit a certain amount of patience from critics and deference from policy-makers. But this would not last indefinitely. The proliferation of timber roads and rapid liquidation of old growth eventually made a mockery of sustained yield and multiple use policies on Northwest national forests, and this, in turn, spelled disaster for the Forest Service's public image." **Paul Hirt in Institutional Failure in the U.S. Forest Service** **42)** "In the past, Registered Professional Foresters emerging from forestry schools across Canada were narrowly trained to maximize fibre production on a given area of land. Safeguarding the health and integrity of ecosystems did not constitute an important dimension of their education or of their work. In the 1990s, significant and long-needed changes are taking place in the forestry curricula in many Canadian schools. However, the new approach is still framed within the sustained yield forest management paradigm, and on prioritizing fibre production over ecosystem health and integrity. Only fundamental reform of the forestry profession can create the New Forester to practice the New Forestry." **Fred Gale in The Wealth of Forests**	

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43) "Through government regulation, "sustained-yield" forestry has become the norm for forest management in North America. As the name implies, sustained-yield forest management focuses on the net productivity of surface resources in the forest. Economic considerations are paramount, and to achieve commercially viable levels of timber in perpetuity, sustained-yield forest management requires frequent intrusions into the woods and aggressive reforestation after harvest. This results in more evenly- aged, less diverse tracts of forestland. In essence, sustained-yield forest management is lowest-common-denominator forestry, producing wood of only average quality and engineering a forest ecosystem that lacks the depth and richness of the natural order." **David Ford Certified Forest Products Council in Wrong Focus of Resource Management** **44)** "The government's forest policy proposal was released in June 1985 in a document entitled To Build a Forest for the Future. The hypothesis underlying the ministry's study was an idea dear to professional foresters in Quebec. They took for granted that maintaining a tree cover sufficient to meet the needs of the wood industry would preserve all of the functions of the forest. This hypothesis brings us back to the classic interpretation of the concept of sustained yield. Focussing on the trees, this concept reduced the function of the forest to wood. This reasoning sacrifices the complexity of the forest to bolster a reductionist and technical approach. The merit of the report, however, was that it simplified the aims of the emerging forest policy and consequently enhanced its short-term chances of success." **Luc Bouthillier in Howlett, ed CANADIAN FOREST POLICY** IDT members still have a chance to redeem your selves and express your true values and ethics. Several IDT members can and should take action to stop the Telegraph timber sale. You know what to do. When the 44 statements above are combined with the information in **Opposing Views Attachments #1** there is only 1 conclusion that can be made. They clearly represent best science. Believing that the recommendations of Mr. Neal, Ms. Scott, Ms. Milburn, Mr. Nunn and Mr. Bielecki who are financially motivated to produce volume should trump the best science I have presented is folly.	
USFS policy and United States' law require the USFS to base their projects implementing the forest plan to be based on best science. This timber sale is of course inconsistent with best science and is	Thank you for your comment.

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being proposed to spend all the timber funding received this FY. Without exception, the unbiased science literature contained in the attachments supports my statements in these comments and disprove most Chapter 3 environmental effects disclosures. **Comment:** Mr. Neal, Ms. Scott, Ms. Milburn, Mr. Nunn and Mr. Bielecki, the independent, unbiased scientists who wrote the Opposing Views Attachments who are not financially or politically connected to logging like you are ALL confident that logging destroys certain resources in the forest. The vast majority of the literature you will find that encourages logging as a way to "restore" the national forests is written by USDA employees or employees their natural resource extraction corporation masters. Of course this type of literature is what you have chosen to cite from the References section. How do you explain that? Now ask yourselves what's going on. A few IDT members who aren't afraid to deal with the truth have already concluded that most USFS line-officers are obsessed by the need to accumulate volume to maintain their promotion potential. They all know the USFS is dominated by a timber culture. Finally, stop justifying resource damage by telling the public the impact is only "short- term" in your Proposed Action effects write-ups. You all know "short-term" impacts sometimes inflict long lasting adverse effects. In most cases the IDT claims of "short-term damage" are not supported by best science. **Final Thought** As I said before, I encourage everyone who reads these comments to read retired Deputy Chief Furnish's new book. The selected quotes I showed on pages 2 and 3 define the theme of the book. Tragically, most USFS line-officers know their promotion potential rests on their ability to satisfy and contribute to the all-encompassing agency timber agenda and culture. It was (and still is) expected that line-officers will say and do anything to get out the cut The agency has given line-officer scores of excuses to log the land owned by 322 million Americans. The most popular excuse being used now is fuels reduction. Deputy Chief Furnish's new book describes how these people hopelessly obsessed with volume accumulation will stop at nothing (including obvious natural resource and recreation damage) to serve-up short term profit opportunities to the natural resource extraction corporations. Supervisor Avey, I don't know you so I have no right to judge you. However, I can say with certainty that	

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this proposed timber sale is quite similar to what these line-officers without land ethics and values propose on a routine basis. Please think about this and review the draft NEPA document again with this in mind. A good place to start is the Purpose & Need. Forget the timber budget and volume expectations and ask yourself if logging and road construction is what the natural resources in the area really need. Ask yourself why you are not addressing the real natural resource problems and needs in the area that logging and road construction will exacerbate. Sincerely, Dick Artley [retired USFS forest planner and a person who believes the availability of undeveloped public land for his grandchildren to enjoy is orders of magnitude more important than short-term corporate profit) 415 NE 2nd Street Grangeville, Idaho 83530 208-983-0181 da99333@gmail.com CC: selected IDT member	

Telegraph Vegetation Project
Review of References Cited in Comments to the Environmental Assessment

Attachment #1
Dick Artley
"Respected Scientists Reveal the Certainty that Natural Resources in the Forest are Harmed (and some destroyed) by Timber Harvest Activities"

Author/Date/Title	Response to literature referenced in opposing views
Al-jabber, Jabber M. 2003. Habitat Fragmentation: Effects and Implications. Unpublished paper.	Opposing View #1: *"The following document contains pertinent color pictures showing logging damage…"* **FS Response:** This is a brief opinion paper which includes literature citations. The paper briefly discusses some basic elements of fragmentation and how such dynamics could possibly influence general suites of species, and species of concern. It is too generic to be of value in site-specific analyses. The Telegraph FEIS examines how habitat alterations could affect various species Furthermore, the risk to habitat security/fragmentation for Threatened, Endangered and Sensitive species was considered.
Anderson, P.G. 1996. Sediment generation from forestry operations and associated effects on aquatic ecosystems. Proceedings of the Forest-Fish Conference: Land Management Practices Affecting Aquatic Ecosystems, May 1-4, 1996, Calgary, Alberta.	Opposing View #2: *"Timber harvest operations have been shown to have many effects on adjacent watercourses and on the aquatic ecosystems they support. This may occur from introductions or loss of woody debris, loss of riparian vegetation, accelerated stream bank and bed erosion, the alteration of natural channel form and process, and the reduction of stream habitat diversity. However, the existing literature indicates one of the most insidious effects of logging is the elevation of sediment loads and increased sedimentation within the drainage basin.* *Sediment generation from various forestry practices has been studied extensively in the past. Forestry practices which generate suspended sediments include all operations that disturb soil surfaces such as site preparations, clear-cutting, log skidding, yarding, slash burns, heavy equipment operation and road construction and maintenance."* **FS Response:** The citation presented by the commenter is a pipeline industry paper. The soils and hydrology sections of the Telegraph FEIS addresses potential sediment delivery related to proposed ground disturbance. The analysis and disclosures are compliant with established Regional protocol and reflect the best science in terms of understanding potential impacts to soil and water resources.

Author/Date/Title	Response to literature referenced in opposing views
Aber John, Norman Christensen, Ivan Fernandez, Jerry Franklin, Lori Hidinger, Malcolm Hunter, James MacMahon, David Mladenoff, John Pastor, David Perry, Ron Slangen, Helga van Miegroet. 2000. Applying Ecological Principles to Management of the U.S. National Forests. Issues in Ecology 2000. No. 6	Opposing View #3: *"Timber harvest will remove dead and dying material from the site and inhibit the recruitment of downed woody material as time progresses. Timber harvest and associated reduced structural complexity and reduced age and size class diversity are all known to reduce population abundance and diversity of ants and a number of birds. For instance, ants are documented to require downed woody material in a variety of sizes and in all stages of decomposition (Torgersen and Bull, 1995). This is an attribute that is negatively correlated with harvest of the dead and dying trees and positively correlated with natural succession, especially after disturbance. Ants and birds are known to predate on insect species which cause mortality to trees, serving as a potentially important population control in the case of epidemics or before they occur (Campbell, Torgersen and Srivastava, 1983). Structural and functional characteristics associated with unlogged forests are also important for canopy arthropods, which play an important role in regulating pest outbreaks (Schowalter, 1989).* *Structural complexity, functional diversity, diversity of ecological process and diversity of structure in roadless areas are all expected to be less susceptible to the outbreak of pests and regulate insect activity in surrounding homogenized forests (Schowalter and Means, 1989; Franklin, Perry, Schowalter, Harmon, McKee and Spies, 1989).* *A large body of scientific evidence also indicates that increased edge effect and increased sunlight into stands, resulting from reduced canopy cover associated with timber harvest, can directly promote the population abundance, productivity and persistence of insects which cause mortality to trees of (Roland, 1993; Rothman and Roland, 1998; Kouki, McCullough and Marshall, 1997; Bellinger, Ravlin and McManus, 1989)."* **FS Response:** The commenter appears to take this paper out of context. All the principles described below apply to the Telegraph Vegetation Project. The authors of this paper state support for active forest management to meet the above goals, and the commenter has taken this research out of context to support his argument. These comments do not have a direct relationship to the proposed action or include supporting reasons for the responsible official to consider. The primary thesis of the paper is captured by the following statements, taken from the paper: "We have identified major ecological considerations

Author/Date/Title	Response to literature referenced in opposing views
	that should be incorporated in sound forest management policy and their potential impacts on current practice: •Maintenance of soil quality and nutrient stocks that hold the key to current and future forest productivity may necessitate adjusting timber harvest rates and leaving more large woody debris on cutover sites. •Protection of water quality and yield and prevention of flooding and landslides call for greater attention to the negative impacts of logging roads and the value of undisturbed buffer zones along streams and rivers. •Conservation of forest biodiversity will often require reducing forest fragmentation by clearcuts and roads, avoiding harvest in vulnerable areas such as hardwood or old growth stands and riparian zones, and restoring natural structural complexity to cutover sites. •Planning at the landscape level is needed to address ecological concerns such as biodiversity, water flows, and forest fragmentation. Repeated overcutting of National Forests lands in the past has been linked to lack of planning at the landscape scale. •Increasing pressures on forests due to human population growth and global change oblige land managers to be alert for climate- related stresses as well as damage from ground-level ozone, acid rain, and acidification of soils and watersheds. The paper also states, "Proposals to ban all timber harvesting on National Forests would leave managers without a valuable tool that can be used selectively to restore early successional habitat, reduce fuel loads, and contain pest and pathogen outbreaks in some forests." All of these issues are addressed in the FEIS and respective Specialist Reports.
Barry, Glen. 2002. Commercial Logging Caused Wildfires. Portland Independent Media Center, August 2002. http://portland.indymedia.org/en/2002/08/17464.shtml	Opposing View #4: "*The biggest ecological con job in years is being waged by the U.S. Republican party and their timber industry cronies. They are blaming the recent Western wildfires on environmentalists, and assuring the public that commercial logging will reduce the risk of catastrophic wildfires.*" **FS Response:** The cited article is 14-year old commentary opposed to the then Bush administration's support for fuels reduction under the National Fire Plan.

Author/Date/Title	Response to literature referenced in opposing views
	The Telegraph Vegetation EIS displays that harvest, thinning, and prescribed burn treatments will effectively modify fire behavior within treated areas and reduce the intensity of a potential wildfire under normal summer conditions. Following harvest activities, the slash will be treated to reduce fire hazard.
Barry, John Byrne. 1999. Stop the Logging, Start the Restoration. Online commentary in Sierra Club's Planet Newsletter June 1999, Vol 6, No. 5. http://www.sierraclub.org/planet/199905/ecl1.asp	Opposing View #5: *"According to a 1998 poll by a firm that has worked for several Republican House members and two presidents, 69 percent of Americans oppose commercial logging on federally owned land. The Forests Service's own poll showed that 59 percent of Americans who expressed an opinion oppose timber sales and other commodity production in national forests."* *"Many Americans are surprised to learn that logging is even allowed on public lands. Alas, it has been since the Organic Act of 1897 first authorized logging in America's new forest reserves. That legislation called for watershed protection and a steady supply of timber - what the Forest Service calls 'multiple use.' "* *"But the agency has been unable to balance those goals. More often than not, the integrity of the forest ecosystem has been sacrificed to maximize timber and other commodities. And at taxpayer expense, notes Bernie Zaleha, chair of the End Commercial Logging on Federal Lands (ECL) campaign. The Forest Service lost $2 billion on its logging program from 1992 to 1997, according to the General Accounting Office. It spends more on building roads and preparing sales than it gets back in timber receipts."* **FS Response:** This is a 17-year old opinion commentary published in a 1999 Sierra Club newsletter, advocating an end to commercial timber harvest on Federal lands. The Sierra Club supported the National Forest Protection and Restoration Act (H.R. 1396) that would eliminate commercial logging on Federal public lands. This bill did not become law. It does not provide specific information related to the Telegraph Vegetation project; nor does the commenter demonstrate a specific connection to this project.
Cushman, John H. Jr. Audit Faults Forest Service on Logging Damage in U.S. Forests. New York Times, February 5, 1999	Opposing View #6: *"Federal auditors have found that the Forest Service frequently fails to assess, prevent or correct environmental damage from logging on the national forests.* *After inspecting 12 timber projects in the field from 1995 to 1998, the Agriculture Department's inspector*

Author/Date/Title	Response to literature referenced in opposing views
	general found that all were deficient and that 'immediate corrective action is needed.' *A new report on the audits found that the environmental studies required before logging was approved were poorly done, the rules to protect streams and wildlife habitat from undue damage during logging were not followed, and the steps planned to repair some of the harm after logging were not carried out.* *The inspector general, Roger C. Viadero, reported on Jan. 15 to Mike Dombeck, chief of the Forest Service, that the review had found ''numerous serious deficiencies.'' Agency officials generally agreed with the report's conclusions and recommendations."* **FS Response:** The referenced audit report was published over 14 years ago on reviews that were conducted 1 to 4 years prior to that in Wisconsin, California, Georgia, Virginia, West Virginia, Mississippi, and Minnesota. The NEPA documents reviewed were completed from 1992 to 1996 (17 to 21 years ago). Then Forest Service Chief Michael Dombeck used this report to implement improved NEPA practices at all levels of the Forest Service. The cited audit is not specific or relevant to Telegraph Vegetation project. The Helena-Lewis and Clark National Forest conduct periodic reviews of BMP compliance, and all projects are monitored. The FEIS includes appropriate BMPs and discloses potential environmental impacts to soil and water, as required by law, regulation and policy.
Dombeck, Mike Ph.D. "Through the Woods" The News Hour with Jim Lehrer. 19 June 1998.	Opposing View #7: *"The timber harvest shouldn't be dominant. It should be on an equal plane with recreation concerns, with wildlife concerns, hunting, fishing, protecting our cultural heritage. That's what the American public is asking us to do."* **FS Response:** The quotation is a portion of a statement made by Mike Dombeck in his capacity as chief of the Forest Service. He made this statement during a discussion about a proposed moratorium on road building within Inventoried Roadless Areas and the resulting impacts on the logging industry in Idaho. The statement in its entirety reads as follows: *"The timber harvest shouldn't be dominant. It should be on an equal plane with recreation concerns, with wildlife concerns, hunting, fishing, protecting our cultural heritage. And if we work within that philosophical framework of working within the limits of the land, everybody benefits. And that's what the American public is asking us to do. The reason that we've been involved in some of the level of controversy*

Author/Date/Title	Response to literature referenced in opposing views
	that we have is because that shift is occurring and change is occurring. And change is always difficult to deal with." Chief Dombeck's statement points out that timber harvest needs to be considered along with the many other uses on the National Forest. The Telegraph Vegetation Project is an integrated resource project that addresses the needs of wildlife, aquatics, vegetation, the local economy, soils, invasive species management, air quality, and recreation within the project area. The Telegraph Vegetation Project does not propose road building in Inventoried Roadless Areas.
Dombeck, Mike. A message on "Conservation Leadership" sent to all USFS employees on July 1, 1998	Opposing View #8: *"I recently read a letter from a line officer who chided local managers for being behind schedule relative to meeting the region's 'timber targets.' My expectation is that line officers will demand similar accountability for meeting watershed restoration, fish and wildlife habitat, riparian, recreation, cultural resource, and wilderness management goals."* *"We need to do a better job talking about, and managing for, the values that are so important to so many people. Values such as wilderness and roadless areas, clean water, protection of rare species, old growth forests, naturalness -- these are the reasons most Americans cherish their public lands."* *"Fifty years ago, Aldo Leopold wrote his seminal work, A Sand County Almanac. In it, Leopold spoke of his personal land ethic and the need for land managers to extend their own ecological conscience to resource decisions. The Forest Service natural resource agenda is an expression of our agency's land ethic. If we are to redeem our role as conservation leaders, it is not enough to be loyal to the Forest Service organization. First and foremost, we must be loyal to our land ethic. In fifty years, we will not be remembered for the resources we developed; we will be thanked for those we maintained and restored for future generations."* **FS Response:** This is an extract of a letter from Mike Dombeck, Forest Service Chief, on the 100th anniversary of Gifford Pinchot's first day as a Forest Service employee, sharing his view on what makes a "conservation leader" in the context of his natural resource agenda. By Federal law (NFMA), forest plans provide the framework for the management of National Forest System lands. The Telegraph Vegetation Project is an integrated resource project that addresses the needs of wildlife, aquatics,

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	vegetation, the local economy, soils, invasive species management, air quality, and recreation within the project area. The project will not affect wilderness values and will meet all Forest Plan standards and guidelines.
Ehrich, Anne, Foster, David and Raven, Peter. 2002. Letter to President George W. Bush. http://www.nativeforest.org/campaigns/public_lands/stb_5_30_02.htm	Opposing View #9: *"For much of the past century the Forest Service, entrusted as the institutional steward of our National Forests, focused its management on an industrial-scale logging program. The result of the massive logging and road construction program was to damage watersheds, destroy wildlife habitat and imperil plant and animal species."* *"The continued logging of our National Forests also wastes American tax dollars and diminishes the possibilities of future economic benefits. The Forest Service lost $2 billion dollars on the commercial logging program between 1992-1997. Annually, timber produces roughly $4 billion while recreation, fish and wildlife, clean water, and unroaded areas provide a combined total of $224 billion to the American economy. Forests purify our drinking water - 60 million Americans get their drinking water from National Forests. When the dramatic values of ecological goods and services are taken into account, it is clear that protecting National Forests creates more economic benefits than continued logging."* **FS Response:** The citation is a 14-year old letter written in 2002 to then President Bush calling for an end to commercial logging on the National Forests and encouraging the development of a policy to restore forests. The Forest Service has since established a policy for using ecological restoration to manage National Forest System lands in a sustainable manner (Forest Service Manual 2020). Ecological restoration focuses on establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions. Timber harvest is one of the tools that will be used to achieve the vegetation and fuels objectives. The EIS and supporting documentation in the Project File demonstrates that the project would improve forest stand conditions, reduce hazardous fuels, reduce sediment and improve water quality and aquatic species habitat and provide commercial and personal-use wood products.

Author/Date/Title	Response to literature referenced in opposing views
"Bush Fire Policy: Clearing Forests So They Do Not Burn." Forest Conservation News Today, August 27, 2002. http://forests.org/archived_site/today/recent/2002/tiporefl.htm	Opposing View #10: *"The Bush administration has announced plans to greatly increase logging on federal lands in order to reduce the risk of wildfires. The Forest Service is using the fear of wildfires to allow logging companies to remove medium-and large-diameter trees that they can sell, rather than just the small trees and brush that can make fires more severe. There is little evidence to show that such logging will prevent catastrophic fires; on the contrary, logging roads and industrial logging cause wildfires. Bush is a well known supporter of the timber industry and has accepted huge sums of money from wealthy timber company leaders. He is promoting misinformation about forest fires in order to benefit timber industry campaign contributors."* **FS Response:** The cited article is opinion commentary written in 2002 criticizing then President Bush and his administration's support for fuels reduction (Healthy Forests Initiative). This is dated opinion not applicable to the current administration nor the Telegraph Vegetation project.
Franklin, Jerry Ph.D., David Perry Ph.D., Reed Noss Ph.D., David Montgomery Ph.D. and Christopher Frissell Ph.D. 2000. Simplified Forest Management to Achieve Watershed and Forest Health: A Critique. National Wildlife Federation Report.	Opposing View #11: *"The proposition that forest values are protected with more, rather than less logging, and that forest reserves are not only unnecessary, but undesirable, has great appeal to many with a vested interest in maximizing timber harvest. These ideas are particularly attractive to institutions and individuals whose incomes depend upon a forest land base. (page 2)"* *"On the other hand, approaches that involve reserving of a portion of the land base, or harvest practices that leave commercially valuable trees uncut to achieve ecological goals, are often considered much less desirable as they reduce traditional sources of timber income. (page 2)"* **FS Response:** The National Wildlife Federation (NWF) commissioned this article, which is a critique of forest management plans and policies that call for active management of essentially the entire forest area, and which specifically reject the consideration of biological reserves and non-traditional harvest techniques, such as structural retention. Much of the focus of this article is on 'intensive' silvicultural management of old growth forests in the Pacific Northwest. The Telegraph Vegetation Project does not propose what the authors are calling Simplified Structure-Based Management. The Telegraph Vegetation Project proposes active management using a variety of

Author/Date/Title	Response to literature referenced in opposing views
	treatments and treatment methods to improve forest stand resilience and reduce forest fuels. Timber harvest is proposed within an area that has been actively managed in the past. The project will not affect old growth stands and individual large, older trees will be retained within treatment areas. Consistent with the recommendations in the article, the Telegraph Vegetation Project will retain coarse woody debris, snags, and other forest structure within vegetation treatment units.
Franklin, Jerry F. Ph.D. and James K. Agee Ph.D. 2007. "Forging a Science-Based National Forest Fire Policy." Issues in Science and Technology. A National Wildlife Federation publication sponsored by the Bullitt Foundation.	Opposing View #12: *"Consequently, we specifically criticize the "simplified structure-based management" approaches derived from simple structural models and traditional silvicultural systems such as clearcutting. In our view, the assumptions underpinning simplified structure-based management (SSBM) are not supported by the published scientific literature on structural development of natural forests, disturbance ecology, landscape ecology and conservation biology, or by the relationships between ecosystem structures and processes. In this report, we review scientific findings associated with each of these areas with particular attention to the over-simplified structural models associated with SSBM and the importance and viability of forest reserves to achieve various ecological goals. (page 2)* *"We do not believe, however, that scientific literature or forestry experience supports the notions that intensively managed forests can duplicate the role of natural forests, or that sufficient knowledge and ability exist to create even an approximation of a natural old-growth forest stand." (page 3)* **FS Response:** The above quotes provided by the commenter are not contained within the reference provided. These quotes are contained within the article cited in #11 above (Franklin, Jerry Ph.D., David Perry Ph.D., Reed Noss Ph.D., David Montgomery Ph.D. and Christopher Frissell Ph.D. 2000. Simplified Forest Management to Achieve Watershed and Forest Health: A Critique. National Wildlife Federation Report). Please see the Forest Service's response to #11. The Telegraph Vegetation Project does not include timber harvest in old growth stands. The article cited here in #12, "Forging a Science-Based National Forest Fire Policy", provides considerations for the development of a national forest fire policy, which is irrelevant to the Telegraph Vegetation Project.

Author/Date/Title	Response to literature referenced in opposing views
Giuliano, Jackie Alan, Ph.D. "Fire Suppression Bush Style: Cut Down the Trees!" Environmental News Service, 2002.	Opposing View #13: *"But the majority of the protesters were angry about Bush's plans to implement rules that would thin our national forests to reduce fire risk. Cascadia Forest Alliance volunteer Carrie Taylor said Bush's plan to log mature and old forests "will only increase fire risks while providing taxpayer subsidized logs to the timber industry."* *"According to the Cascadia Forest Alliance, under the Bush proposal, 'environmental laws and citizen involvement will be undermined or suspended so that federal land management agencies can increase logging and road building on public lands, one of the timber industry's highest priorities.'"* **FS Response:** This article is opinion commentary written over 14 years ago in opposition to the former Bush administration's Healthy Forests Initiative and is not relevant to the Telegraph Vegetation project. The Telegraph Vegetation project is not proposed under the authority of the Healthy Forests Restoration Act, which stemmed from the Healthy Forests Initiative. No activities will occur within old growth stands. The Telegraph Vegetation project is consistent with applicable laws and public involvement has been ongoing since the project's initiation of this project.
GAO. 1999. Western National Forests: A cohesive strategy is needed to address catastrophic wildfire threats. Report to the subcommittee on Forests and Forest Health, Committee on Resources, House of Representatives. April. Available at www.gao.gov. 60 p. Cited in attachment as: Government Accounting Office "Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats" GAO/RCED-99-65	Opposing View #14: *"Most of the trees that need to be removed to reduce accumulated fuels are small in diameter and have little or no commercial value."* *"Mechanically removing fuels (through commercial timber harvesting and other means) can also have adverse effects on wildlife habitat and water quality in many areas. Officials told GAO that, because of these effects, a large-scale expansion of commercial timber harvesting alone for removing materials would not be feasible. However, because the Forest Service relies on the timber program for funding many of its activities, including reducing fuels, it has often used this program to address the wildfire problem. The difficulty with such an approach, however, is that the lands with commercially valuable timber are often not those with the greatest wildfire hazards."* **FS Response:** The literature citation is a report to Congress from the Government Accounting Office that recommends the development of a cohesive strategy for reducing and maintaining accumulated fuels on national forests of the interior West at acceptable levels. The quotes provided by the commenter are describing what the GAO identifies as some of the

Author/Date/Title	Response to literature referenced in opposing views
	barriers to the effective action of addressing catastrophic wildfire (page 7). This literature reference is not relevant to the Telegraph Vegetation project because it recommends a National policy for addressing wildfire and fuel conditions across the interior West, which is not within the scope of this project. The Telegraph Vegetation project proposes various site-specific treatments including prescribed burning, mechanical treatment, and thinning to improve forest stand resilience and reduce hazardous fuels.
Gorte, Ross W. Ph.D. "Forest Service Timber Sale Practices and Procedures: Analysis of Alternative Systems." A Congressional Research Service (CRS) report, October 30, 1995.	Opposing View #15: *"The recent concern over the poor health of western pine ecosystems has been attributed at least partly to inappropriate silvicultural practices, both before and since the national forests were established. (4) Because of the timber industry's needs, logging in mixed conifer stands has emphasized cutting the large pines and leaving the true firs and Douglas-fir to dominate the remaining stands. (5) However, true firs and Douglas-fir are more susceptible to the damage (including insect and disease attacks as well as direct damage) that has occurred during the decade-long drought in the interior West, and thus may contribute to the risk of catastrophic wildfires. Salvage sales are one tool that can be used to improve forest health, (6) but critics object to granting the agency the discretion to use timber sales to correct problems partially created by past timber sales."* *"A more general concern in some quarters is over Forest Service "bias" toward timber outputs, at the expense of ecosystem conditions and other resource values. While timber harvests are important, other important values are not measured, and managers are not rewarded for achieving these other values. (7) Some have attributed this "bias" to inappropriate incentives, particularly related to the agency's numerous trust funds and special accounts. (8) The Forest Service has several trust funds and special accounts that are either funded by timber revenues or provide funds for timber management (or both). (9)"* *"One trust fund often cited by critics is the Knutson-Vandenberg (K-V) Fund. This account receives an unlimited portion of timber sale receipts, to be used for reforestation, timber stand improvements, and other resource mitigation and enhancement activities in timber sale areas. Forest Service managers can, therefore, fund their programs from timber sales; in the words of one critic, wildlife managers have an incentive to support timber sales that damage wildlife habitat, because they can use the revenues to mitigate that*

Author/Date/Title	Response to literature referenced in opposing views
	damage and to keep themselves and their staffs employed. (10)" **FS Response:** This 21-year old cited literature reference provides an overview of the Forest Service timber sale system (i.e. timber sale contract process) and examines possible changes to the system. The quotes provided by the commenter are listed within the article as concerns that some "interest groups and members of Congress" have expressed about the Forest Service timber sale program in the 15 or more years preceding the publication of the article in 1995. The Telegraph Vegetation Project is an integrated resource project that addresses the needs of vegetation, wildlife, aquatics, noxious weed management, transportation management, and recreation. K-V funds must first be used for essential reforestation. Only timber sales that sell above Forest Service base rates generate K-V funds for non-essential projects, like wildlife habitat improvement. Therefore, the availability of K-V funding for work other than reforestation is never assured.
Hanson, Chad, "Commercial Logging Doesn't Prevent Catastrophic Fires, It Causes Them." Published in the New York Times, May 19, 2000	Opposing View #16: *"In April 1999, the General Accounting Office issued a report that raised serious questions about the use of timber sales as a tool of fire management. It noted that "most of the trees that need to be removed to reduce accumulated fuels are small in diameter" -- the very trees that have 'little or no commercial value.' "* *"As it offers timber for sale to loggers, the Forest Service tends to 'focus on areas with high-value commercial timber rather than on areas with high fire hazards,' the report said. Its sales include 'more large, commercially valuable trees' than are necessary to reduce the so-called accumulated fuels (in other words, the trees that are most likely to burn in a forest fire)."* *"The truth is that timber sales are causing catastrophic wildfires on national forests, not alleviating them. The Sierra Nevada Ecosystem Project Report, issued in 1996 by the federal government, found that 'timber harvest, through its effects on forest structure, local microclimate and fuel accumulation, has increased fire severity more than any other recent human activity.' The reason goes back to the same conflict that the G.A.O. found: loggers want the big trees, not the little ones that act as fuel in forest fires."* *"After a 'thinning' timber sale, a forest has far fewer of the large trees, which are naturally fire-resistant because of their thick bark; indeed, many of these trees*

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	are centuries old and have already survived many fires. Without them, there is less shade. The forest is drier and hotter, making the remaining, smaller trees more susceptible to burning. After logging, forests also have accumulations of flammable debris known as "slash piles" -- unsalable branches and limbs left by logging crews." **FS Response:** The Sierra Nevada Framework is specific to more dry (xeric) forest communities in California and not the inland Northern Rockies. The Telegraph Vegetation Project is not intended to "prevent catastrophic fires" but to improve conditions for fire suppression effectiveness as well as firefighter and public safety among other purposes. Regeneration harvest in the Telegraph Vegetation Project targets stands that have heavy mortality due to mountain pine beetle, not high-value stands.
Hanson, Chad, Ph.D. "National Forest Protection" Environment Now	Opposing View #17: *"But all of these benefits are harmed by one activity-commercial logging on national forests through the Forest Service's timber sale program, in which private timber companies pay the Forest Service to be allowed to cut down trees on public land."* *"In other words, the timber sales program functions as a particularly destructive form of government subsidy to private logging companies. This subsidy is so large that if the government ended the Forest Service timber sales program, a portion of the money saved could be used employ every timber worker that is currently involved in cutting down national forests to instead work on ecological restoration, repairing the damage that has been done to our forests, and there would still be millions of dollars remaining in taxpayers savings."* **FS Response:** This is an opinion piece arguing against post-fire logging in old-growth stands in northern California. The author states that salvaging is an excuse to cut otherwise off-limits old-growth forests. Article cites literature that concludes post-fire logging does not reduce fire intensity in previously logged stands and that leaving large dead wood does not significantly increase the probability of a return. The Telegraph Vegetation Project does not propose post-fire salvage and no harvest activities are proposed in old growth units.
Hanson, Chad Ph.D., "Logging Industry Misleads on Climate and Forest Fires." Guest Commentary in New West, July 11, 2008	Opposing View #18: *"Recent editorials by timber industry spokespersons are a wildly misleading attempt to promote increased logging of western U.S. forests under the guise of reducing wildland fires …"*

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	FS Response: The cited article is opinion commentary written in response to previous editorials. The author criticizes an unnamed timber industry spokespersons for making what he claims are false statements regarding wildland fires and climate change. It is simply an opinion made by the author of other unknown material.
Harvey, A. E., M. J. Larsen, and M. F. Jurgensen. 1976. Distribution of Ectomycorrhizae in a Mature Douglas-fir/larch Forest Soil in Western Montana. Forest Science, Volume 22, Number 4, 1 December 1976 , pp. 393-398(6)	Opposing View #19: *"Logging reduces the organic parent material (duff and woody residues) available for soil-formation processes."* **FS Response:** This paper describes the mineral and organic composition of soils developed from limestone parent material at a location 10 miles south of Glacier National Park in Montana. The cited reference actually says, "Increased tree utilization potentially reduces the organic parent materials (litter and woody residues) available for soil-formation processes." The authors conclude, "the parent materials (leaves, litter, and woody residues) for soil organic reserves may require management during timber harvesting and prescribed burning to prevent a subsequent loss in the capacity of soils of this type (limestone base) to support ectomycorrihizal associations in mature Douglas-fir/larch forests." The authors measured active ectomycorrhizae associated with the various organic and mineral components of the soil, and found that five percent of the active ectomycorrhizae occurred in the mineral fraction, 66 percent in the humus, 21 percent in the decayed wood, and 8 percent in the charcoal. From this information, they conclude that soil organic matter is important in the formation and activity of ectomycorrhizae in Douglas fir/larch timber types found in Western Montana. They emphasize that their results should only be applied to mature forests and are not applicable to young or regenerating forests. The need to provide for organic matter is recognized in the EIS, per the recommendations of Graham and others (1994), which are the guidelines cited in the Northern Region Soil Quality Standards (USDA Forest Service 1999). This research paper is a fundamental document in terms of understanding organic matter's role in the ecosystem and how to avoid detrimental impacts. The EIS discusses soils, organic matter, and potential impacts.

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Houston, Alan Ph.D., "Why Forestry is in Trouble with the Public." Evergreen magazine, October 1997.	Opposing View #20: *"For too long, we foresters took the public for granted, assuming unwavering support for those who grow the nation's wood fiber. Few noticed when the public's mood changed, and those who did were often ridiculed by disbelieving colleagues. Now we come to a day of reckoning: the public believes forests are too important to be entrusted to foresters. To restore lost confidence, foresters must first come out of hiding. We have a lot of explaining to do because, where forests are concerned, the public will no longer support what it cannot see and understand. Regaining the public's trust will take time. We must be prepared to answer hard questions about what we are doing and how our actions are impacting the environment. We must also help the public think through its forest management options. When we lay out these options, we must speak of much more than trees. Only then will our critics know we love forests as much as they do."* **FS Response:** The cited opinion is listed by itself as a "quotable quote" in Evergreen magazine and is not tied to a specific reference. The quote is an opinion that provides nothing substantive to respond to. The Telegraph Vegetation project was developed with the public and provided an opportunity to discuss site-specifics with those who participated. The process served as a positive forum to share information and learn from one another.
H. R. 1494 text. April 4, 2001	Opposing View #21 *"SEC. 3. FINDINGS. Congress finds the following:* *Commercial logging has many indirect costs which are very significant, but not easily measured, such as flooding damage and relief of flooding damage through Federal funds, damage to the salmon fishing industry; and harm to the recreation and tourism industries."* **FS Response:** This was a proposed law which was never moved forward and has no relevance to the Telegraph project. The citation is language from a proposed 2001 bill before the House of Representatives that did not become law. A financial analysis was conducted and disclosed in the EIS.
Hudak, Mike Ph.D. "From Prairie Dogs to Oysters: How Biodiversity Sustains Us" from his book review of The Work of Nature: How the Diversity of Life Sustains Us by Yvonne Baskin, 1997. Newsletter of Earth Day Southern Tier, February/March 1999, p. 2	Opposing View #22: *"Human tampering with nature has not been without costs. Human manipulation of existing ecosystems has also sometimes had unfortunate consequences."* **FS Response:** The citation is a review of the book "The Work of Nature: How the Diversity of Life Sustains Us" by Yvonne Baskin. We agree human beings have

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	manipulated the environment since the beginning of their existence, sometimes with unintended consequences. The Telegraph Vegetation project does not propose any of the actions identified in the book review article which included draining of wetlands, introduction of non-native species, or establishing monocultures.
Huff, Mark H.; Ottmar, Roger D.; Alvarado, Ernesto; Vihnanek, Robert E.; Lehmkuhl, John F.; Hessburg, Paul F.; Everett, Richard L. 1995. Historical and current forest landscapes in eastern Oregon and Washington. Part II: Linking vegetation characteristics to potential fire behavior and related smoke production Gen. Tech. Rep. PNW-GTR-355. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 43 p. (Everett, Richard L., team leader; Eastside forest ecosystem health assessment; Hessburg, Paul F., science team leader and tech. ed., Volume III: assessment.).	Opposing View #23: "*In general, rate of spread and flame length were positively correlated with the proportion of area logged (hereafter, area logged) for the sample watersheds. Correlation coefficients of area logged with rate of spread were > 0.57 for five of the six river basins (table 5). Rate of spread for the Pend Oreille and Wenatchee River basins was strongly associated (r-0.89) with area logged. Correlation of area logged with flame length were > 0.42 for four of six river basins (table 5). The Deschutes and Methow River basins showed the strongest relations. All harvest techniques were associated with increasing rate of spread and flame length, but strength of the associations differed greatly among river basins and harvesting methods." (pg.9)* *"As a by-product of clearcutting, thinning, and other tree-removal activities, activity fuels create both short- and long-term fire hazards to ecosystems. The potential rate of spread and intensity of fires associated with recently cut logging residues is high, especially the first year or two as the material decays. High fire-behavior hazards associated with the residues can extend, however, for many years depending on the tree. Even though these hazards diminish, their influence on fire behavior can linger for up to 30 years in the dry forest ecosystems of eastern Washington and Oregon."* **FS Response:** The paper referenced (Huff et al. 1995) above was an attempt to compare the potential fire behavior and smoke production of historical and current time periods for forty-nine 5,100 to 13,500 hectare watersheds. It was a landscape-level modeling exercise based upon vegetation type and timber harvest type classification from aerial photo interpretation of historic (1938-1959) and current (1985-1992) aerial photos. The authors used fuel behavior photo series to assign fuel loading by vegetation type for non-harvested areas and by harvest-type in harvested areas. Due to lack of site-specific information, they assigned a fire behavior photo series that matched older logging slash to the harvests, assuming in the process that no post-treatment fuels reduction treatments had ever taken place. They also only modeled surface and moderate-

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	to low-intensity understory fires and constant weather and topographic conditions. This study has little relevance to the Telegraph Vegetation Project that proposes various vegetation treatments followed by prescribed burning to reduce fuels rather than create them. The fuels and fire behavior conditions created by the project will differ greatly than that modeled by Huff et al. (1995).
Ingalsbee, Timothy. 1997. Logging for Firefighting: A Critical Analysis of the Quincy Library Group Fire Protection Plan. Unpublished research paper for the Western Ancient Forest Campaign. 1997.	Opposing View #24: *"The Quincy Library Group's (QLG's) fuelbreak strategy represents a giant step backwards from the progressive development of rational fire policies established by the 1995 Federal Wildland Fire Management Policy and Program Review."* *"The fact that the QLG admits that its Plan is inconsistent with these new policies (indeed, is almost gleefully defiant of them) says a lot about the credibility of the QLG's self-purported fire management expertise."* *"In spite of (or more likely because of) the intensive 'fuels reduction' activities associated with commercial logging, the Fountain Fire was truly catastrophic in its effects."* *"Even 'kinder, gentler' commercial logging still inflicts environmental impacts such as eroded topsoil, degraded water quality, destroyed wildlife habitat, and extirpated species that are every bit as much symptoms of forest health problems as large-scale, severe wildfires."* *"And after spending millions of dollars creating the SNEP Report, it seems wise to use its information, not ignore it or opportunistically select out statements clearly worded as assumptions, values, or goals which run contrary to factual research findings. The QLG Plan has much more to do with timber extraction than with genuine fire protection, and in that respect, it constitutes more of a forest health threat than a real solution."* *"The QLG Bill resembles similar 'panic legislation' that was passed during the early 1970s in which, following some large-scale wildfires in California, Congress allowed the Forest Service to access emergency firefighting funds to conduct 'presuppression' timber sales. Many fuelbreaks were cut in the Sierras during this period, and while costs rapidly rose into tens of millions of dollars, most of these fuelbreaks failed to perform adequately during wildfire suppression incidents. Congress quickly had to take away this funding source from the Forest Service. What has become of these old fuelbreaks? Almost without exception, the agency failed to monitor or maintain them, and in a modern-day version of 'cut and run'*

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	logging, many of these old fuelbreaks have converted to chaparral brush and 'dog-hair' thickets … a much more flammable vegetation type than the original forest cover. The QLG Bill appears to be 'deja vu' without evidence of Congress or the QLG being aware of this history of previous fuelbreak programs." **FS Response:** The cited article is opinion commentary that criticizes H.R. 858, the Quincy Library Group Forest Recovery and Economic Stability Act of 1997, which has no relevance to the Telegraph Vegetation Project. H.R. 858 directed the Secretary of Agriculture to conduct a pilot project on Federal lands on the Plumas, Lassen, and Tahoe National Forests in California to demonstrate the effectiveness of specified fire resiliency resource management activities recommended by the Quincy Library Group. The bill did not pass into law.
Ingalsbee, Timothy. 2000. Commercial Logging for Wildfire Prevention: Facts Vs. Fantasies. Unpublished paper Western Fire Ecology Center.	Opposing View #25: *"The notion that commercial logging can prevent wildfires has its believers and loud proponents, but this belief does not match up with the scientific evidence or history of federal management practices. In fact, it is widely recognized that past commercial logging, road-building, livestock grazing and aggressive firefighting are the sources for "forest health" problems such as increased insect infestations, disease outbreaks, and severe wildfires."* *"How can the sources of these problems also be their solution? This internal contradiction needs more than propaganda to be resolved. It is time for the timber industry and their supporters to heed the facts, not fantasies, and develop forest management policies based on science, not politics."* **FS Response:** The cited article is opinion commentary. "Commercial logging" cannot prevent wildfires which the Forest Service has never said it would. To "prevent" wildfires, one would have to stop all human and natural (i.e. lightning) ignition sources. However, vegetation treatments of all kinds are accomplished to modify fire behavior within treated areas. Ample evidence suggests that fuels treatments can be used to modify fire intensity and severity. Examples of this evidence are: • Ager et al. 2007. A simulation study of thinning and fuel treatments on a wildland-urban interface in eastern Oregon, USA. Landscape and Urban Planning 80 (2007) 292-300. • Carey, Henry, Schumann, Martha. 2003. Modifying Wildfire Behavior – The Effectiveness of Fuel

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	Treatments. National Community Forestry Center. Southwest Region Working Paper 2. • Cram, D.S., T.T. Baker, and J.C. Boren. 2006. Wildland fire effects in silviculturally treated versus untreated stand of New Mexico and Arizona. USDA Forest Service Rocky Mountain Research Station. RMRS-Rp-55. • Dailey et al. 2008. Fire behavior and effects in fuels treatments and protected habitat on the Moonlight Fire. USDA Forest Service, Pacific Southwest Research Station. • Finney et al. 2005. Stand and landscape-level effects of prescribed burning on two Arizona wildfires. Canadian Journal of Forest Research. 35: 1714-1722 • Fites et al. 2007. Fire behavior and effects relating to suppression, fuel treatments, and protected areas on the Antelope Complex Wheeler Fire. USDA Forest Service, Pacific Southwest Research Station. • Fule et al. 2001. Potential fire behavior is reduced following forest restoration treatments. Vance, Regina K.; Edminster, Carleton B.; Covington, W. Wallace; Blake, Julie A. comps. 2001. Ponderosa pine ecosystems restoration and conservation: steps toward stewardship; 2000 April 25–27; Flagstaff, AZ. Proceedings RMRS-P-22. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. • Graham R.T., Harvey, A.E., Jain, T.B., Tonn, J.R. 1999. The Effects of Thinning and Similar Stand Treatments on Fire Behavior in Western Forests. USDA Forest Service, Pacific Northwest Research Station. USDI Bureau of Land Management. General Technical Report PNW-GTR-463. • Graham R.T., McCaffrey, S.l Jain, T.B. 2004. Science Basis for Changing Forest Structure to Modify Wildfire Behavior and Severity. USDA Forest Service, Rocky Mountain Research Station. General Technical Report RMRS-GTR-120. • Hanson, C.T., Odion, D.C. 2006. Fire severity in mechanically thinned versus unthinned forests of the Sierra Nevada, California. In: Proceedings of the 3rd International Fire Ecology and Management Congress, November 13-17, 2006, San Diego, CA. • Hunter, M.E.; Shepperd, W.D.; Lentile, J.E.; Lundquist, J.E.; Andreu, M.G.; Butler, J.L.; Smith, F.W. 2007. A comprehensive guide to fuels treatment practices for ponderosa pine in the Black Hills, Colorado Front

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	Range, and Southwest. Gen. Tech. Rep. RMRS-GTR-198. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 93 p. • Jerman et al. 2004. Slash compression treatment reduced tree mortality from prescribed fire in southwestern ponderosa pine. Western Journal of Applied forestry. 19(3) • Johnson, Morris C.; Peterson, David L.; Raymond, Crystal L. 2007. Guide to fuel treatments in dry forests of the Western United States: assessing forest structure and fire hazard. Gen. Tech. Rep. PNW-GTR-686. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 322 p. • Keyes and O'Hara. 2002. Quantifying stand targets for silvicultural prevention of crown fires. Western Journal of Applied forestry. 17(2) • Murphy et al. 2007. An assessment of fuel treatment effects on fire behavior, suppression effectiveness, and structure ignition on the Angora Fire. USDA Forest Service Southwest Region. R5-TP-025 • Omi & Martinson. 2004. Effectiveness of thinning and prescribed fire in reducing wildfire severity. USDA Forest Service Gen. Tech. Rep. PSW-GTR-193 • Omi, Philip N., Martinson, Erik J., Chong, Geneva W. 2006. Effectiveness of Pre-Fire Fuel Treatments. Submitted to the Joint Fire Science Program Governing Board. Final Report JFSP Project 03-2-1-07. • Peterson, D.L., Johnson, M.C., Agee, J.K., Jain, T.B., McKenzie, D., Reinhardt, E. 2005. Forest Structure and Fire Hazard in Dry Forests of the Western United States. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-628. • Pollet & Omi.2002.Effect of thinning and prescribed burning on crown fire severity in ponderosa pine forests. International Journal of Wildland Fire. 11: 1-10 • Roccaforte et al. 2008. Landscape-scale changes in canopy fuels and potential fire behavior following ponderosa pine restoration treatments. International Journal of Wildland Fire. 17: 293-303 • Schroeder. 2006. Effectiveness of forest fuel management: a crown fire case study in the Northwest Territories, Canada. Forest Research Institute of Canada. • Skinner et al. Effects of prescribed fire and thinning on wildfire severity; the Cone Fire, Blacks Mountain

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	Experimental Forest. Proceedings: 25th Vegetation Management Conference. • Stephens and Moghaddas. 2005. Experimental fuel treatment impacts on forest structure, potential fire behavior, and predicted tree mortality in a California mixed conifer forest. Forest Ecology and Management. 215: 21-36 • Stephens and Moghaddas. 2005. Silvicultural and reserve impacts on potential fire behavior and forest conservation; 25 years of experience from Sierra Nevada mixed conifer forests. Biological Conservation. 125: 369-379 • Stephens. 1998. Evaluation of the effects of silvicultural and fuels treatments on potential fire behavior in Sierra Nevada mixed-conifer forests. Forest Ecology and Management. 105: 21-35 • Strom and Fule. 2007. Pre-wildfire fuel treatments affect long-term ponderosa pine forest dynamics. International Journal of Wildland Fire. 16: 128-138 • Strom. 2005. Pre-fire treatment effects and post-fire forest dynamics on the Rodeo-Chediski burn area, Arizona. Masters Thesis. Northern Arizona University.
Ingalsbee, Timothy Ph.D. "Logging without Limits isn't a Solution to Wildfires" published in the Portland Oregonian, August 6, 2002	Opposing View #26: "*Since the 'New Perspectives' program of the early 1990s, the agency has tried to dodge public opposition to commercial logging by using various euphemisms, such as this gem from the Siskiyou National Forest: Clearcuts are called 'minimum green tree retention units.' Accordingly, Forest Service managers have believed that if they simply refer to logging as 'thinning,' or add the phrases 'fuels reduction' or 'forest restoration' to the title of their timber sale plans, then the public will accept these projects at face value, and business-as-usual commercial logging can proceed. In the face of multiple scandals and widespread public skepticism of the Forest Service's credibility, it seems that only Congress is buying the agency's labeling scheme.*" **FS Response:** The cited article is opinion commentary, written over 14 years ago. In the paragraph following the one the commenter cites, the author writes, *"There does appear to be growing consensus among forest managers, fire scientists, and environmentalists, too, on the need for some kind of carefully targeted tree thinning as one tool for reducing wildfire hazards. But the consensus centers on the need to thin the 'thin stuff' – brush and understory trees – not the 'thick stuff' – large diameter mature and old growth trees."* The

Author/Date/Title	Response to literature referenced in opposing views
	author is correct that research suggests thinning can be an effective tool for reducing fire intensity and severity within treated areas (see literature citations listed in the response to #25 above.
Ingalsbee, Timothy Ph.D. "The wildland fires of 2002 illuminate fundamental questions about our relationship to fire." The Oregon Quarterly, Winter 2002	Opposing View #27: *"Thus, the use of commercial logging for fire hazard reduction poses yet another paradox: Logging removes the trees that normally survive fires, leaves behind the trees that are most often killed by fire, increases flammable fuel loads, and worsens fire weather conditions." (pg. 5)* **FS Response:** In the article, immediately following the quote above, the author comments: *"There is a role for strategic thinning of small-diameter understory trees and brush, but thinning should focus on genuinely thin trees, not the thick, tall, mature, and old trees most valuable to wildlife and watersheds. Moreover, thinning proposals should not be falsely advertised as a means of preventing wildfires, but rather, as a means of preparing forests for prescribed and wildland fires."* The article is an opinion piece in which the author provides no supporting material for his conclusions.
Ingalsbee, Timothy Ph.D. "Fanning the Flames! The U.S. Forest Service: A Fire-Dependent Bureaucracy." Missoula Independent. Vol. 14 No. 24, June 2003	Opposing View #28: *"In the face of growing public scrutiny and criticism of the agency's logging policies and practices, the Forest Service and their enablers in Congress have learned to mask timber sales as so-called 'fuels reduction' and 'forest restoration' projects. Yet, the net effect of these logging projects is to actually increase fire risks and fuel hazards."* *"Decades of encouraging private logging companies to take the biggest, oldest, most fire-resistant trees from public lands, while leaving behind a volatile fuel load of small trees, brush, weeds, stumps and slash has vastly increased the flammability of forestlands."* *"In addition to post-fire salvage logging, the Forest Service and timber industry advocates in Congress have been pushing pre-fire timber sales, often falsely billed as hazardous fuels reduction or 'thinning' projects, to lower the risk or hazard of future wildfires. In too many cases, these so-called thinning projects are logging thick-diameter fire-resistant overstory trees instead of or in addition to cutting thin-sized fire-susceptible understory trees. The resulting logging slash and the increased solar and wind exposure can paradoxically increase the fuel hazards and fire risks."* **FS Response:** This article is opinion commentary and the points made are essentially the same as those in

Author/Date/Title	Response to literature referenced in opposing views
	the above cited articles written by the same author. Please see the responses to #25 to #27.
Ingalsbee, Timothy Ph.D. 2005. "A Reporter's Guide to Wildland Fire." Published by the Firefighters United for Safety, Ethics, and Ecology (FUSE), January 2005	Opposing View #29: *"More than any other recent human activity, the legacy of commercial timber extraction has made public forests more flammable and less resilient to fire. Firstly, clearcut and high-grade logging have historically taken the largest, most fire-resilient, most commercially-valuable trees, and left behind dead needles and limbs (logging debris called "slash"), along with smaller trees and brush that are less commercially valuable but more flammable than mature and old-growth trees. The net effect is to increase the amount of available hazardous fuel."* *"Secondly, the removal of large overstory trees also changes the microclimate of logged sites, making them hotter, drier, and windier, which increases the intensity and rate of spread of wildfires. Third, the creation of densely-stocked even-aged plantations of young conifers made sites even more flammable since this produced a solid mass of highly combustible conifer needles within easy reach of surface flames. These changes in the fuel load, fuel profile, and microclimate make logged sites more prone to high-intensity and high-severity wildfires."* **FS Response:** The first opposing view is not applicable to the Telegraph Vegetation Project, as all timber harvest activities would include appropriate slash disposal methods. These methods, such as mechanical piling and subsequent burning of the piles when weather conditions permit, reduce the amount of available hazardous fuel to levels well below those amounts prior to the timber harvest activities. The EIS demonstrates how the fuel model types are changed from the pre- to post-treatment conditions. In some situations, fuels are indeed temporarily created that would burn at a faster rate of spread, but these fuels are also much easier to control with standard firefighting techniques as the duration and intensity of the burn is so much less than the large, heavy fuels found in the pre-treatment areas.
Jalkotzy, M. G., Ross, P. I., and Nasserden, M. D. The effects of Linear Developments on Wildlife: A Review of Selected Scientific Literature. Report: 1-354. 1997. Calgary, Prep. For Canadian Association of Petroleum Producers. Arc Wildlife Services Ltd.	Opposing View #30: *"Linear developments may result in habitat avoidance for grizzly bears. Logging-truck traffic in the Kimsquit Valley in British Columbia resulted in a 78% reduction in use of the "Zone of Hauling Activity" by radio collared bears compared to non-hauling periods (16). For 14 hours/day, 3%-23% of each bear's home range was unavailable to them because of disturbance."*

Author/Date/Title	Response to literature referenced in opposing views
	"The impacts of land-use activities on wolverines are likely similar to those on grizzly bears. Wolverines seem to have been most affected by activities that fragment and supplant habitat, such as human settlement, extensive logging, oil and gas development, mining, recreational developments, and the accompanying access. Wolverine populations that are now at the edge of extirpation have been relegated to the last available habitat that has not been developed, extensively modified, or accessed by humans." **FS Response:** This document is a review of the scientific literature on the effects of linear developments on wildlife, especially the types created by the oil and pipeline industries in western Canada Since the Jalkotzy, et al. paper was published, the USFWS issued a proposed rule to list the wolverine in the contiguous United States as a threatened species under the Endangered Species Act (February 4, 2013; 78 FR 7864) (USDI-FWS 2013). In their proposed ruling, the USFWS determined that global climate change is the primary threat to the species, and that legal and incidental trapping of wolverines are substantial threats in concert with climate change. Management activities of land management agencies, for example, winter recreation and timber harvest, were not identified as threats (78 FR 7877-7879). The EIS disclosed potential impacts of the Telegraph Vegetation project on wildlife species.
Keene, Roy "Logging does not prevent wildfires" Guest Viewpoint, the Eugene Register Guard January 11, 2009	Opposing View #31: *"History, not science, refutes the claim that logging helps to prevent forest fires.* *The forests of the West are far more vulnerable to fire due to a century of industrial logging and fire suppression. Logging has removed most of the older, fire-resistant trees from the forests.* *Fire suppression has encouraged many smaller and more flammable trees, brush and dense plantations to fill the holes. Logging has set the forests of the West up to burn big and hot.* *More logging will not fix this."* **FS Response:** The article is opinion commentary that was written in response to a guest viewpoint published in an Oregon newspaper. Please see responses to #25, #26, and #27. As stated in #25, logging cannot prevent wildfires and the Forest Service has never said it would. However, vegetation treatments of all kinds are done to modify fire intensity and severity within treated areas, which is supported by numerous studies (see

Author/Date/Title	Response to literature referenced in opposing views
	literature citations listed in response to #25. The Telegraph Vegetation Project would retain the larger, fire resistant trees and fire-resistant tree species.
Keene, Roy Restorative Logging? "More rarity than reality" Guest Viewpoint, the Eugene Register Guard March 10, 2011	Opposing View #32: *"Fear of wildfire is heavily used to sell these forest "restoration" schemes. Logging has not been proven, in practice, to reduce fire frequency or intensity. Historically, the largest, most destructive blazes, like the Tillamook conflagration, were caused from logging or fueled by slash. Unlogged forests, cool and shaded, are typically more fire resistant than cut over, dried-up stands choked with slash and weeds.* *Large-scale logging (by any name) has devalued our forests, degraded our waters, damaged soils, and endangered a wide variety of plants and animals. How will the current round of politically and environmentally propelled 'restorative' logging proposals differ, in practice, from past logging regimes?"* **FS Response:** The article is opinion commentary that was printed in an Oregon newspaper. The Tillamook Burn that the author refers to was a series of large forest fires in the northern Oregon Coast Range mountains 50 miles west of Portland. It began in 1933 and struck at six-year intervals through 1951, burning a combined total of 355,000 acres. The largest of the four fires started in August 1933 within a logging operation. Near record weather conditions with a 104º temperature and relative humidity of about 20 percent combined with dry fuel conditions contributed to the rapid growth and high intensity and severity of the fire. The subsequent fires in 1939, 1945, and 1951 primarily reburned the area affected by the first fire. The harvest proposed in the Telegraph Vegetation project differs greatly from the logging that occurred in the Pacific Northwest in the 1930s. In the 1930s, it is likely that slash was rarely, if ever, treated. The Telegraph Vegetation project will treat the natural and activity generated slash.
Keppeler, Elizabeth T. Robert R. Ziemer Ph.D., and Peter H. Cafferata. Effects of Human-Induced Changes on Hydrologic Systems. An American Water Resources Association publication, June 1994	Opposing View #33: *"Timber harvesting operations affect hydrologic processes by reducing canopy interception and evapotranspiration. Many studies have documented changes in soil properties following tractor yarding (Stone, 1977; Cafferata, l983), and low-ground-pressure skidding (Sidle and Drlica, 1981). More recently, researchers have evaluated cable yarding (Miller and Sirois, 1986; Purser and Cundy, 1992). In general, these studies report decreased hydraulic conductivity and increased bulk density in forest soils after harvest."*

Author/Date/Title	Response to literature referenced in opposing views
	FS Response: This publication is an excellent source of data for analyzing effects of timber harvest on soils in the Pacific Northwest. Although the terrain and climate are different that of the Telegraph project area, the general concepts of effects on soils from timber harvest activities are applicable and well understood by the IDT soil scientist and the Responsible Official. There is adequate information in the EIS in both the soils section and the water resources section, which discuss the effects the proposed activities will have on hydrologic systems. Increased bulk density and decreased hydraulic conductivity can occur with the ground-based harvest planned for the project; however, project design features will minimize these potential effects. All harvest units would comply with the Northern Region Soil Quality Standards (USDA Forest Service 1999). A comprehensive, site-specific analysis of potential impacts to water and soil resources is included in the EIS.
Klein, Al. 2004. Logging Effects on Amphibian Larvae Populations in Ottawa National Forest. University of Notre Dame post-graduate thesis July, 2004.	Opposing View #34: *"Among these four species of amphibians, the spotted salamander is most likely to be affected adversely by the logging as this species of salamander relies on dense forests with full canopies (Harding, 1997)."* *"Looking at the study on a larger scale, the potential for changes caused by logging is great. Absence of trees could influence water temperature by altering available sunlight, conductivity by changing the amount of organic matter that collects in the vernal ponds, or pH if the logging process deposits foreign residues to the area. Also heavy equipment used to harvest the timber has the potential to alter the terrain."* *"Modifications to the landscape could change how water flows and collects at the surface and change the size, shape, and location of the vernal ponds. Loss or alteration to small temporary water sources less than four hectares can be extremely detrimental to amphibians water (Semlitsch, 2000). Without vernal ponds amphibians would have difficulty inhabiting forested areas because they rely on the ponds as breeding grounds. If logging disturbs the ponds, amphibian populations could diminish in the areas that surround these vernal pools."* **FS Response:** Although the title of the cited article infers that the effects of logging were studied, only 'pre-logging' data was collected in seven vernal ponds in Michigan's Upper Peninsula. No post-logging data were collected; therefore, no conclusions regarding the effects of logging on amphibians can be drawn from

Author/Date/Title	Response to literature referenced in opposing views
	this article that was written by a college student attending the University of Notre Dame. The second quote provided by the commenter is an unsupported assumption by the author. In his assumptions, the author also fails to define the harvest type and logging method to be used. Silvicultural practices vary depending on the objectives to be achieved. The spotted salamander is found in the eastern United States and Canada; thus the Telegraph Vegetation project area in western Montana is far outside its range.
Laverty, Lyle, USDA Forest Service and Tim Hartzell U.S. Department of the Interior "A Report to the President in Response to the Wildfires of 2000", September 8, 2000.	Opposing View #35: *"The Congressional Research Service (CRS) recently addressed the effect of logging on wildfires in an August 2000 report and found that the current wave of forest fires is not related to a decline in timber harvest on Federal lands. From a quantitative perspective, the CRS study indicates a very weak relationship between acres logged and the extent and severity of forest fires. To the contrary, in the most recent period (1980 through 1999) the data indicate that fewer acres burned in areas where logging activity was limited."* *"Qualitative analysis by CRS supports the same conclusion. The CRS stated: "[T]imber harvesting removes the relatively large diameter wood that can be converted into wood products, but leaves behind the small material, especially twigs and needles. The concentration of these fine fuels on the forest floor increases the rate of spread of wildfires." Similarly, the National Research Council found that logging and clearcutting can cause rapid regeneration of shrubs and trees that can create highly flammable fuel conditions within a few years of cutting"* **FS Response:** The cited paper is a report prepared in response to then President Clinton's request for recommendations on how to best respond to the 2000 wildfires, reduce the impacts of the wildland fires on rural communities, and ensure sufficient firefighting resources in the future. The quotes provided by the commenter were made in response to critics of the President's proposal to protect roadless areas. These critics expressed concern that the roadless policy could increase wildfire risks. On the next page, the report supports thinning stands to reduce small diameter trees, underbrush, and accumulated fuels. It cites a study that demonstrated fuel reduction treatments (which included thinning) were effective in mitigating fire severity. In the Telegraph Vegetation Project, thinning and other

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	harvest activities will be used to modify fire behavior as well as meet other vegetation objectives. The large, fire-resistant trees will be retained and the natural and activity-generated slash will be treated.
Lawrence, Nathaniel, NRDC senior attorney "Gridlock on the National Forests" Testimony before the U.S. House of Representatives Subcommittee on Forests and Forest Health (Committee on Resources) December 4, 2001.	Opposing View #36: *"I will turn first to forest thinning aimed at reducing fire risks. There is surprisingly little scientific information about how thinning actually affects overall fire risk in national forests."* *"How can it be that thinning could increase fire risks? First, thinning lets in sunlight and wind, both of which dry out the forest interior and increase flammability. Second, the most flammable material - brush, limbs, twigs, needles, and saplings - is difficult to remove and often left behind. Third, opening up forests promotes brushy, flammable undergrowth. Fourth, logging equipment compacts soil so that water runs off instead of filtering in to keep soils moist and trees healthy. Fifth, thinning introduces diseases and pests, wounds the trees left behind, and generally disrupts natural processes, including some that regulate forest health, all the more so if road construction is involved."* **FS Response:** The first statement may have been incorrect in 2001, when it was made, and is certainly incorrect now. A number of studies and reports have been made over the years investigating the effect of thinning on fire behavior and effects (refer to the list of some of these studies and reports in the response to #25 above). The EIS acknowledges that wind exposure may be increased within timber harvest units and surface fuels could be drier as a result. Thus, fire researchers indicate it is critical that surface fuels be treated to minimize fire intensity (Graham et al. 1999; Agee and Skinner 2005; Graham et al. 2004; Peterson et al. 2005). Slash reduction will be conducted following harvest. The quotation given above also says that *"logging equipment compacts soil so that water runs off instead of filtering in to keep soils moist."* It is true that logging equipment (particularly ground-based equipment) can compact soils, but project design, resource protection measures, and best management practices effectively minimize soil disturbance. The Telegraph Vegetation project will meet Region1 soil quality standards.
Leitner, Brian. "Logging Companies are Responsible for the California Wildfires." the Democratic Underground, October 30, 2003.	Opposing View #37: "*Those who would argue that this form of logging has any positive effects on an ecosystem are clearly misinformed. This type of logging has side effects related to wildfires, first and foremost being that*

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	the lumber companies aren't interested in hauling out all the smaller trees, branches, leaves, pine needles, sawdust, and other debris generated by cutting all these trees. All this debris is left on site, quickly dries out, and is far more flammable sitting dead on the ground than it was living in the trees. Smaller, non-commercially viable trees are left behind (dead) as well - creating even more highly flammable fuel on the ground." **FS Response:** The "form of logging" that the author is referring to is not a component of the Telegraph Vegetation project. The *"smaller trees, branches, leaves, pine needles, sawdust, and other debris generated by cutting all these trees"* is specifically treated by either mechanical means or broadcast burning to meet State of Montana standards for slash treatment. Meeting these standards leave the treatment areas in a fuels conditions that a wildland fire can effectively be suppressed with a minimal amount of resources.
Long, Richard D., U.S. Department of Agriculture Office of Inspector General. Western Region Audit Report: Forest Service National Fire Plan Implementation. Report No. 08601-26-SF, November 2001.	Opposing View #38: *"We concluded that commercial timber sales do not meet the criteria for forest restoration." (Pg. 11)* **FS Response:** The citation pertains to the use of National Fire Plan funds to restore and rehabilitate watersheds that were severely burned by wildfires in 2000. This has no relevance to the Telegraph Vegetation project.
Mann, Charles C. Ph.D. and Mark L. Plummer Ph.D. "Call for 'Sustainability' in Forests Sparks a Fire" Science 26 March 1999: Vol. 283. no. 5410, pp. 1996 – 1998	Opposing View #39: *"In hopes of ending conflicts over "multiple use," an independent scientific committee has proposed that "ecological sustainability" should become the principal goal in managing the U.S. national forests and grasslands, which since 1960 have been under a congressional mandate to serve industry, recreation, and conservation all at once."* **FS Response:** Sustainability is the foundation of forest management on the National Forest System. This article summarized the process to date (as of 1999) that a committee of scientists went through to prepare a report with recommendations to the Forest Service for updating the National Forest Management Act by incorporating them into upcoming draft regulations. The Forest Service will continue to follow all laws as mandated, including the Multiple Use Sustained Yield Act and the National Forest Management Act.

Author/Date/Title	Response to literature referenced in opposing views
Maser, C. Ph.D., and J. M. Trappe. 1984. The Seen and Unseen World of the Fallen Tree. USDA Forest Service 1984, GTR-PNW-164	Opposing View #40: *"Logging removes a mass that harbor a myriad of organisms, from bacteria and actinomycetes to higher fungi. The smaller organisms, not visible to the unaided eye, are still important components of the system."* **FS Response:** This literature is consistent with literature cited regarding the recruitment and retention of coarse woody debris (e.g. Graham et al, 1994). The full text of the abridged citation quoted above is as follows and is found on page 16 of the reference (emphasis added): *"Fallen trees harbor a myriad of organisms, from bacteria and actinomycetes to higher fungi. Of these, only some of the fungi might be noticed by the casual observer as mushrooms or bracket fungi (fig. 16). These structures, however, are merely the fruiting bodies produced by mold colonies within the log. Many fungi fruit within the fallen tree, so they are seen only when the tree is torn apart (fig. 17). Even when a fallen tree is torn apart, only a fraction of the fungi present are noticed because the fruiting bodies of most appear only for a small portion of the year. The smaller organisms, not visible to the unaided eye, are still important components of the system."* The importance and need for coarse woody debris and effects of the proposed actions on coarse woody debris retention/recruitment were considered and analyzed. Coarse woody debris recruitment is also provided for by the regional soil quality standards.
Maser, C. Ph.D., R. F. Tarrant, J. M. Trappe Ph.D., and J. F. Franklin Ph.D. 1988. The Forest to the Sea: A Story of Fallen Trees. USDA Forest Service, GTR-PNW-GTR-229	Opposing View #41: *"Logging removes mature and maturing trees which conserve essential elements, whereas the area containing new very young planted trees following logging are susceptible to erosion and essential element loss." (pg.5)* *"Logging removes tree parts that would have created and maintained diversity in forest communities." (pg. 44)* **FS Response:** The first quotation provided by the commenter is not a direct quote from the article. On page 5, the authors write, "*The forest's character changes with succession. Net primary productivity is greater in young forests than in old ones. Old forests conserve nutrients, whereas very young forests are susceptible to erosion and nutrient loss (Franklin and others 1981).*" Logging is not mentioned. This statement is made in Chapter 1, which is entitled "Coarse Woody Debris in Forests and Plantations of

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	Coastal Oregon." The second "quotation" provided by the commenter is also not a direct quote from the cited article. On page 44, the authors write, "*Fallen trees also create and maintain diversity in forest communities."* Logging is not mentioned. This statement is made in Chapter 2 entitled, "What We Know About Large Trees that Fall to the Forest Floor," which is written about Pacific Northwest forests. In the Telegraph Vegetation project, coarse woody debris (standing and downed) will be maintained within treatment units in accordance with the standards described in the Helena National Forest Plan. The larger trees will be retained. Harvest treatment will not increase erosion because standard operating procedures and site-specific resource protection measures will minimize the operational footprint and maintain the forest floor, ground cover, and soil organic matter.
McIntosh, B.A., J.R. Sedell, J.E. Smith, R.C. Wissmar S.E. Clarke, G.H. Reeves, and L.A. Brown "Management history of eastside ecosystems: changes in fish habitat over 50 years, 1935-1992." 1994. GTR-321 93-181	Opposing View #42: *"In addition to the direct effects of habitat loss and fragmentation, logging typically reduces ecosystem health by:* *a) damaging aquatic habitats through siltation, reduction in stream complexity and increased water temperatures."* **FS Response:** The cited literature discusses how fish habitat has changed in select river basins of eastern Washington and Oregon from 1935 to 1992. In reviewing changes in stream habitat, the authors also reviewed changing patterns in land use, streamflow, and climate regimes over time. The land use history of these river basins includes mining, livestock grazing, road construction, irrigation diversions and other agricultural practices, and timber harvest and associated activities. The authors conclude that a combination of these land-use practices has 'simplified' fish habitat, resulting in a loss in the frequency and diversity of habitat types (pools, riffles, side-channels), reduced large woody debris and other structural elements, and declining water quality (temperature). They suggest that to restore fish habitat to a state that will support self-sustaining fish populations, these streams are in need of less fine sediment, more shade, and increased habitat complexity. The quotation provided by the commenter is not found within the cited article. The Telegraph Vegetation Project is consistent with the restoration recommendations provided in the article,

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	and follows INSTREAM and Riparian Management Zone standards.
Moring, John R. Ph.D. 1975. "The Alsea Watershed Study: Effects of Logging on the Aquatic Resources of Three Headwater Streams of the Alsea River, Oregon – Part III." Fishery Report Number 9. Oregon Department of Fish and Wildlife.	Opposing View #43: *"Logging practices can indirectly result in changes in the biological components of a stream, and can have direct and indirect on the physical environment in streams.* *The primary environmental changes of concern are the effects of siltation, logging debris, gravel scouring, destruction of developing embryos and alevins, blockage of streamflow, decrease in surface and intragravel dissolved oxygen, increase in maximum and diel water temperatures, changes in pool/riffle ratios and cover, redistribution of fishes, reduction in fish numbers, and reduction in total biomass."* **FS Response:** This article was written in 1975, prior to the advent of Best Management Practices. The study reviewed clearcut logging conducted in the mid-1960s in coastal Oregon. The article makes the following recommendations: 1. The preservation of buffer strips is essential for the prevention of direct physical changes and indirect biological changes in the stream environment. 2. Roads should be designed and constructed so as to minimize their function as a source of excess sediment and mass transport of material in subsequent years. Roads should be designed to utilize natural benches and saddles; sidecast material should be as far away from the stream as possible; unstable soils should be avoided; fish passage should be considered in culvert design. 3. No felling should occur into or across the stream or on to the immediate bank 4. No logs should be yarded through streams. 5. Excess logging debris should be removed from a stream as soon as possible after felling. The Telegraph Vegetation Project complies with all the recommendations listed above. Road maintenance and road construction (temporary and specified road) will apply best management practices. Road construction will occur on stable soils in mid to upper slope locations.
Naeem, Shahid, F.S. Chapin III, Robert Costanza, Paul R. Ehrlich, Frank B. Golley, David U. Hooper. J.H. Lawton, Robert V. O'Neill, Harold A. Mooney, Osvaldo E. Sala, Amy J. Symstad, and David Tilman. Biodiversity and Ecosystem	Opposing View #44: *"Biodiversity in managed ecosystems is poor. Less biodiverse communities and ecosystems are more susceptible to adverse weather (such as drought) and exotic invaders, and have greatly reduced rates of biomass production and nutrient cycling."*

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Functioning: Maintaining Natural Life Support Processes. Issues in Ecology No. 4. Fall 1999.	*"All of these studies show that ecosystem functioning is decreased as the number of species in a community decreases. Declines in functioning can be particularly acute when the number of species is low, such as in most managed ecosystems including croplands or timber plantations."* *"Recent evidence demonstrates that both the magnitude and stability of ecosystem functioning are likely to be significantly altered by declines in local diversity, especially when diversity reaches the low levels typical of managed ecosystems."* **FS Response:** First quoted paragraph not found in referenced document, which is a report on a "*consensus reached by a panel of twelve scientists chosen to include a broad array of expertise*." The report suggests that "*reductions in biodiversity can alter both the magnitude and the stability of ecosystem processes, especially when biodiversity is reduced to the low levels typical of many managed systems*." The introduction of the document states, "*On local and regional scales, biodiversity declines are already pronounced in many areas, especially where natural ecosystems have been converted to croplands, timber plantations, aquaculture and other managed ecosystems. The diversity of these managed ecosystems is often low, and species composition very different, compared with those of the natural systems they have replaced*." The cited article is not specific to forest management. It generally discusses the effects of local and global biodiversity on ecosystem processes. The Telegraph Vegetation Project will not reduce biodiversity or ecosystem function.
Nappier, Sharon. Lost in the Forest: How the Forest Service's Misdirection, Mismanagement, and Mischief Squanders Your Tax Dollars. Taxpayers for Common Sense, 2002.	Opposing View #45: *"As a result of the Forest Service's well-documented mismanagement over many years of the timber sale program, taxpayers also have been stuck with the tab for hundreds of millions of dollars worth of subsidies to a profitable timber industry."* **FS Response:** This 14-year-old article is an opinion paper offering review and comment regarding the road maintenance backlog on National Forest System lands, the costs associated with the construction of new logging roads, the taxpayer's subsidies for road construction and the Forest Service inability to provide data that displays the cost of its timber sale program. The author describes as "chronicled waste, fraud, and fiscal abuse at the agency." The citation from the commenter is taken from the executive

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	summary of the document and refers to the Bush administration's failure to address road maintenance while advancing an agenda that promotes new road construction. The article also cites a 2001 GAO report associated with the cost of the timber sales program. In the article, the Forest Service commented that they will be implementing a new accounting system to track and evaluate the timber sale program. In the article, five recommendations were made to the Forest Service: 1. That the Forest Service release financial records for the timber program on an annual basis. 2. That the Forest Service reform its budget priorities 3. That the Forest Service focus on road maintenance 4. That the Forest Service institute a sealed bid process for timber sales and 5. That the Forest Service Support the Roadless Area Conservation Rule This article is not relevant to the project as the above recommendations are National in scale and deal with Forest Service policy at the Washington Office level.
Noble, Ian R. and Rodolfo Dirzo Ph.D. "Forests as Human-Dominated Ecosystems." Science Vol. 277. No. 5325, pp. 522 - 525. 25 July 1997.	Opposing View #46: *"Agroforestry does reduce biodiversity. In forests used for logging, whole-landscape management is crucial. Here, emphasis is placed on areas of intensive use interspersed with areas for conservation and catchment purposes. Management strategies for sustainable forestry are being developed, but there is a need for further interaction among foresters, ecologists, community representatives, social scientists, and economists."* **FS Response:** This article discusses the change in and loss of forested acres on a world-wide scale, different types of forest management practices, and the use of sustainable forestry. Full quote (emphasis added): *"Forests are human-dominated ecosystems. Many of the seemingly lightly managed or unmanaged forests are actually in use for agroforestry or for hunting and gathering. Agroforestry does reduce biodiversity, but it can also act as an effective buffer to forest clearance and conversion to other land uses, which present the greatest threat to forested ecosystems. In forests used for logging, whole-landscape management is crucial. Here, emphasis is placed on areas of intensive use interspersed with areas for conservation and catchment purposes. Management strategies for sustainable forestry are being developed, but there is a need for further interaction among foresters, ecologists,*

Author/Date/Title	Response to literature referenced in opposing views
	community representatives, social scientists, and economists" The practice of agroforestry is not relevant to the Telegraph Vegetation Project.
Northup, Jim. 1999. "Public Wants More Wilderness, Less Logging on Green Mountain NF". Press Release by Forest Watch, a Vermont-based environmental organization.	Opposing View #47: *"The U.S. Forest Service has been sitting on a public opinion survey it commissioned, not knowing what to do with the results. The problem is that most people surveyed want more wilderness and less logging on the Green Mountain National Forest (GMNF), while the federal agency seems to want to build more roads and cut more trees."* *"The survey conducted by Dr. Robert Manning of the School of Natural Resources at the University of Vermont, polled 1,500 Vermont households in the spring of 1995. A survey with similar results was completed last fall for the White Mountain National Forest in New Hampshire. 'It is clear that New England residents value the national forest for many reasons, but non-material values, such as aesthetics and ecological protection, are more important than material values, such as economic development,' said Dr. Manning."* *"The responses to several survey questions indicate a strong public desire for more areas of wild, untouched nature on the GMNF and less roadbuilding and logging. Very few people supported clearcutting and other types of industrial logging, especially if natural beauty or wildlife habitat were harmed."* *"For example:* • *82 percent wanted to ban clearcutting,* • *82 percent said logging should not hurt scenic beauty,* • *80 percent of the respondents wanted to protect remaining undisturbed forest; and* • *72 percent urged prohibition of logging if bear or other wildlife habitat would be harmed."* *"Only 36 percent felt that management of the GMNF should emphasize timber and lumber products; and only 15 percent felt that jobs are more important than protection of endangered species."* *"'The results of this survey and a similar one on the White Mountain National Forest in Vermont should serve as loud wake-up calls to the U.S. Forest Service,' said Northup. 'Forest Service officials have two choices: either begin a major overhaul of the agency's management programs or ignore the wishes of the people they are supposed to serve'."*

Author/Date/Title	Response to literature referenced in opposing views
	FS Response: The cited article is opinion commentary regarding a public opinion survey conducted in 1995 (over 21 years ago) about the management of the Green Mountain National Forest in Vermont. This article is not relevant to the Telegraph Vegetation project in Montana. Vegetation management activities will occur within an area that has been previously managed. Project activities will not adversely affect wildlife populations or habitat.
Okoand Ilan Kayatsky, Dan. "Fight Fire with Logging?" Mother Jones, August 1, 2002	Opposing View #48: *"Still, forestry experts warned in the 2000 plan that logging should be used carefully and rarely; in fact, the original draft states plainly that the "removal of large merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk."* *"Now, critics charge that the Bush administration is ignoring that warning. Neil Lawrence, a policy analyst with the Natural Resource Defense Council, claims that Washington has taken a far more aggressive approach to incorporating commercial logging in its wildfire prevention plans. As a result, Lawrence and other critics say, the National Fire Plan is becoming a feeding ground for logging companies. Moreover, critics claim the administration's strategy, far from protecting the lives and homes of those most at risk, could actually increase the likelihood of wildfires."* **FS Response:** The cited article is opinion commentary written over 14 years ago about the implementation of the National Fire Plan, which has little relevance to the Telegraph Vegetation Project. Please see responses to #25 to #27 above.
Platt, Rutherford V., Thomas T. Veblen, and Rosemary L. Sherriff. Are Wildfire Mitigation and Restoration of Historic Forest Structure Compatible? A Spatial Modeling Assessment. Annals of the Association of American Geographers, 96(3), 2006, pp. 455–470	Opposing View #49: *"In response to catastrophic wildfires, wide-reaching forest management policies have been enacted in recent years, most notably the Healthy Forests Restoration Act of 2003. A key premise underlying these policies is that fire suppression has resulted in denser forests than were present historically in some western forest types. Therefore, although reducing the threat of wildfire is the primary goal, forest managers commonly view fuel treatments as a means to restore historic forest structure in those forest types that are outside of their historic range of variation. This study evaluates where both wildfire mitigation and restoration of historic forest structure are potentially needed in the ponderosa pine–dominated montane forest zone of Boulder County, Colorado. Two spatial models were overlain: a model of potential fireline intensity and a model of historic fire frequency. The overlay was then aggregated by land management classes.*

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	Contrary to current assumptions, results of this study indicate that both wildfire mitigation and restoration of historic forest structure are needed in only a small part of the study area, primarily at low elevations. *Furthermore, little of this land is located on Forest Service land where most of the current thinning projects are taking place. We question the validity of thinning as a means both to reduce the threat of wildfire and to restore historic forest structure in the absence of site-specific data collection on past and present landscape conditions."* **FS Response:** The paper discusses the historical role of fire in the ponderosa pine ecosystems of the Colorado front. The authors describe the fire regime as "mixed," a designation that includes stand-replacing fire. They conclude that not all ponderosa pine forests should be returned to a "nonlethal" state if the goal is to create historical conditions. This, therefore, was the basis for the conclusion in paragraph 2. Contrary to the conclusions made regarding Boulder County, Colorado, the fire regimes and vegetation/fuel conditions in northwest Montana that are in need of restoration to historical forest structures are not limited to the lower elevations or away from the National Forests. Analysis for the Telegraph Vegetation project included collecting site-specific data on both past and present landscape conditions. Past and current data collection was used to help design the proposed vegetation and fuels treatments.
Powell, Douglas S., Joanne L. Faulkner, David R. Darr, Zhiliang Zhu, and Douglas W. MacCleery. 1992. Forest Resources of the United States. USDA Forest Service. Rocky Mt. Forest and Range Experiment Station. Gen. Tech. Rep. RM-234.	Opposing View #50: *"Private lands are more suitable for timber production. National Forest land is on average of lower productivity and on steeper, higher elevation terrain than are private forestlands."* **FS Response:** The cited reference is a compilation of information for the 1992 Resources Planning Act Assessment Update showing the status of the Nation's forest resource, particularly the timber resource. The second sentence in the provided quotation was stated by the authors (page 8), but not the first. The first sentence is a conclusion drawn by the commenter. The area proposed for timber harvest in the Telegraph Vegetation Project is designated suitable for timber production in the Helena National Forest Plan. Regardless, providing wood products is not the only objective of the Telegraph Vegetation Project. Timber harvest will be used as a tool to achieve vegetation and fuels reduction objectives. Trees cut as a by-product

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	from vegetation and fuels management activities will be removed and utilized as wood products.
Raven, Peter, Ph.D., Jane Goodall, C.B.E., Ph.D., Edward O. Wilson, Ph. D. and over 600 other leading biologists, ecologists, foresters, and scientists from other forest specialties. From a 1998 letter to congress.	Opposing View #52: *"Less than 5% of America's original forests remain, and these forests are found primarily on federal lands. Logging in the last core areas of biodiversity is destroying the remaining intact forest ecosystems in the United States. At the current rate of logging, these forests and their priceless biological assets will be destroyed within a few decades.* *We urge Congress to pass the Act to Save America's Forests. It is the first nationwide legislation that would halt and reverse deforestation on all our federal lands. By implementing protective measures based on principles of conservation biology, the bill provides a scientifically sound legislative solution for halting the rapid decline of our nation's forest ecosystems.* *The Act to Save America's Forests will:* • *Make the preservation and restoration of native biodiversity the central mission of Federal forest management agencies.* • *Ban extractive logging in core areas of biodiversity and the last remnant original forest ecosystems: roadless areas, ancient forests and special areas of outstanding biological value.* • *Protect sensitive riparian areas and watershed values by banning extractive logging in streamside buffer zones.* • *End clearcutting and other even age logging practices on federal land.* • *Establish a panel of scientists to provide guidance to federal forest management.* *We believe it is our professional responsibility to ask Congress to align Federal forest management with modern scientific understandings of forest ecosystems. Passage of the Act to Save America's Forests will give our nation's precious forest ecosystems the best chance of survival and recovery into the 21st century and beyond."* **FS Response:** The Act to Save America's Forests was introduced but not passed into law, and the bulleted tenants of the proposed act are the opinion of its drafters. Deforestation refers to the conversion of

Author/Date/Title	Response to literature referenced in opposing views
	forest to non-forest use, not applicable to the Telegraph Vegetation Project.
Raven, Peter. February 9, 2001 letter to Senator Jean Carnahan.	Opposing View #53: *"The Act to Save America's Forests is based on the principles of conservation biology. It would make the protection native biodiversity the primary goal of federal forest management agencies. The bill would protect over 20 million acres of core forest areas throughout the nation, including ancient forests, roadless areas, key watershed, and other special areas. It is a comprehensive, sustainable, and ecologically-sound plan for protecting and restoring the entire federal forest system.* *If the current pace of logging planned by the Forest Service continues, nearly all of America's ancient and roadless wild forests will soon be lost forever. According to a recent report by the World Resources Institute, only one percent of the original forest cover remains in large blocks within the lower 48 states. The Act to Save America's Forests incorporates the solution recommended by the report, namely to protect core forest areas from any logging and to allow sustainable forest practices around these protected forests. Endorsed by over 600 leading scientists, this bill may be the last hope for America's forests."* **FS Response:** The Act to Save America's Forests was introduced but not passed into law, and the bulleted tenants of the proposed act are the opinion of its drafters. Deforestation refers to the conversion of forest to non-forest use, not applicable to the Telegraph Vegetation Project.
Roberson, Emily B. Ph.D., Senior Policy Analyst, California Native Plant Society. August 12, 2002 letter to Chief Dale Bosworth.	Opposing View #54: *"It is well established that logging and roadbuilding often increase both fuel loading and fire risk. For example, the Sierra Nevada Ecosystem Project (SNEP) Science Team (1996) concluded that "timber harvest…. has increased fire severity more than any other recent human activity" in the Sierra Nevada. Timber harvest may increase fire hazard by drying of microclimate associated with canopy opening and with roads, by increases in fuel loading by generation of activity fuels, by increases in ignition sources associated with machinery and roads, by changes in species composition due to opening of stands, by the spread of highly flammable non native weeds, insects and disease, and by decreases in forest health associated with damage to soil and residual trees (DellaSala and Frost, 2001; Graham et al., 2001; Weatherspoon et al., 1992; SNEP Science Team, 1996). Indeed a recent literature review reported that some studies have found a positive correlation between the occurrence of past logging and*

Author/Date/Title	Response to literature referenced in opposing views
	present fire hazard in some forest types in the Interior Columbia Basin (DellaSala and Frost, 2001)." **FS Response:** Concerns identified in the quotation will be mitigated through project design and resource protection measures. Natural and project-generated slash will be treated following harvest activities to mitigate fire hazard. The cited letter also says, *"Like most in the scientific and conservation community, California Native Plant Society is neither in favor of or opposed to logging per se. Instead we advocate forest, fire and fuels management practices that minimize danger to lives and property; create and maintain sustainable, productive forest ecosystems dominated by viable plant species; conserve rare and imperiled species through their natural ranges; and protect water quality and supply, soils and other forest ecosystem services and resources."* The Telegraph Vegetation Project will maintain sustainable productive forest ecosystems, conserve rare plants, and protect water quality and supply, soils, and other forest resources.
Roelofs, Terry D. Ph.D. Testimony for the California State Water Board and Regional Water Quality Control Boards Regarding Waivers of Waste Discharge Requirements on Timber Harvest Plans. August 2003.	Opposing View #55: *"I will discuss my views on how activities related to timber harvest adversely affect coastal salmonids in California by destroying, altering, or otherwise disturbing the freshwater habitats upon which these fish depend during crucial phases of their life cycle. I base these opinions on my research and observations in the field, as well as my review of and familiarity with the scientific literature and publications of government agencies, commissions, and scientific review panels. Below I discuss in some detail the life history and habitat needs of coho salmon to illustrate how timber harvest and related roads affect this threatened species. Although Chinook salmon and steelhead trout have similar life histories and habitat needs, and also are negatively affected by timber harvest, I will use coho salmon in my discussion."* *"Loss or degradation of stream habitat has been and remains the single most significant cause of the decline of anadromous salmonids in general in the Pacific Northwest. In my experience the most pervasive and severe impacts to coastal watersheds in California inhabited by coho salmon result from logging and associated activities. These activities cause significant alteration and degradation to coho salmon habitat by 1) increasing sediment input to salmon bearing streams and their tributaries: 2) by decreasing input of LWD into waterways; 3) by altering streamflow regimes,*

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	increasing the likelihood of scouring flows and flooding; and 4) by increasing water temperatures. These pervasive changes due to timber harvest decrease the complexity and suitability of coho salmon habitat, including adversely affecting insects and other organisms that provide food for fish." **FS Response:** Concerns identified in the quotation will be mitigated through project design and resource protection measures. Natural and project-generated slash will be treated following harvest activities to mitigate fire hazard. The cited letter also says, "Like most in the scientific and conservation community, California Native Plant Society is neither in favor of or opposed to logging per se. Instead we advocate forest, fire and fuels management practices that minimize danger to lives and property; create and maintain sustainable, productive forest ecosystems dominated by viable plant species; conserve rare and imperiled species through their natural ranges; and protect water quality and supply, soils and other forest ecosystem services and resources." The Telegraph Vegetation Project will maintain sustainable productive forest ecosystems, conserve rare plants, and protect water quality and supply, soils, and other forest resources.
Rudzitis, Gundars. 1999. Amenities Increasingly Draw People to the Rural West. Rural Development Perspectives, vol. 14, no. 2	Opposing View #56: "*People moving to the region may do so for reasons related to the social environment and the physical landscape but not care about specific Federal land management practices. We found this not to be true, since 92 percent were concerned with how Federal lands were managed. The most frequent preferences for managing Federal lands were water/watershed and ecosystem protection (table 3). Timber harvesting was cited by 16 percent, grazing and ranching by 6 percent, and mineral exploration/mining by less than 1 percent. Overall, protective strategies made up 76 percent of the preferred management strategies and commodity-based strategies 23 percent. This same trend is evident for the second and third most stated preferences. These findings also contradict the longstanding view of the Federal lands as a public warehouse of commodities to be harvested and jobs to be filled. For newcomers in the rural West, the value of these public lands is related to protecting and preserving them."* **FS Response:** In the late 1980s, the author of the cited article conducted a study of why 1,800 people migrated into a sample of 15 western counties with high levels of

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	physical amenities. In 1995, the author conducted another survey with a sample of 571 residents in a 100-county area in the interior Columbia River basin. Table 3 referenced in the quotation lists the most important public land uses cited by newcomers to the rural West. The preferences given were protect water/watershed 20.2%; protect ecosystems 18.3%; recreational uses 16.9%; timber harvesting 16.3%; preserve wilderness values 9.6%; protect fish/wildlife habitat 9.1%; grazing and ranching 5.9%; mineral exploration/ extraction 0.5%; and other 1.7%. The difference between the highest preference and timber harvest was slightly less than 4 percent. The article also states that 71 percent of rural persons favored some timber harvesting, compared with 62 percent of urbanites. The author suggests that the emphasis of survey respondents appeared to be on good stewardship, with commodity production allowed only if the ecosystems of the Federal lands are not degraded. It is uncertain if these 20-year old opinion survey results are valid today particularly after the recent economic downturn, a decade of large wildfires across the West, and insect induced tree mortality that has occurred across large expanses of forestland in places like Colorado.
Scott, Mark G. Forest Clearing in the Gray's River Watershed 1905-1996. A research paper submitted in partial fulfillment of the requirements for the degree of Master Of Science In Geography Portland State University, 2001	Opposing View #57: *"Once clear-cutting has occurred, regulation and human silvicultural practices become responsible for the revegetation that follows. The creation of new forest succession patterns are the result of human control over the growing environment. Rather than proceeding at a natural pace, humans attempt to speed up the forest succession process to quickly return to a situation where harvesting is again possible. Reforestation of the disturbed area after clear-cutting also emphasizes maintaining control over the distribution and quality of forest species.* *Simplification is a state that results from the forest being harvested before it reaches maturity. Logging simplifies forest ecosystems (Dudley et al 1995) by narrowing the age range of the stand and suppressing diversification through repeated harvesting, burning to remove slash, and replanting with hybrid seedlings. Simplification affects the health and productivity of the forest because simplified forests lack the variety found in older stands, including species diversity, vertical structure, and microhabitat. From an ecological standpoint, a simplified forest of a particular age has less overall bio-mass per acre than a natural forest of*

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	the same age, but a simplified forest produces a higher volume of merchantable timber. **FS Response:** The cited paper is a review of timber harvest activities over 90 years within the Gray's River watershed located in coastal southwest Washington. Nearly all the land within the Gray River watershed is owned by private timber companies. The paper discusses the use of clearcutting and loss of old growth forests within the watershed. This article has no relevance to the Telegraph Vegetation Project in Montana because the forest types, climate, and past harvest history are very different from that of the Gray's watershed, and proposed stand treatments are designed to accelerate natural regeneration.
Short, Brant and Dayle C. Hardy-Short. "Physicians of the Forest": A Rhetorical Critique of the Bush Healthy Forest Initiative. Electronic Green Journal Volume 1, Issue 19, 2003.	Opposing View #58: *"Within this volatile atmosphere the Bush Administration presented a new proposal for fire prevention called the "Healthy Forest Initiative." The plan received wide coverage in the national media in August and September 2002 and continues to be at the center of an attempt to significantly shift public land management in the United States. At the core of the plan is an effort to create private sector incentives to promote logging/thinning projects in the national forests."* **FS Response:** The article is opinion commentary written in 2003 about the debate over federal fire policy following the 2002 fire season and issuance of the Bush Administration's Healthy Forest Initiative. The Telegraph Vegetation Project is not being proposed under the authority of the Healthy Forests Restoration Act (HFRA) that stemmed from the Healthy Forest Initiative.
Sierra Club. 2005 "Ending Commercial Logging on Public Lands"	Opposing View #59: *"Logging on the National Forests provides less than 5% of the nation's timber supply, but costs the taxpayers more than 1 billion dollars in subsidies every year. Nor is logging a good job provider compared to recreation, which by Forest Service estimates provides over 30 times the economic benefits of logging. These forests are the last remnants of the virgin forests that covered the country, and now have far more value as forest ecosystems, watershed/water supply protection, and recreational assets than for logging. In fact, the justification for the Weeks Act in 1911 which established national forests in the east, was watershed protection.* *(A major barrier to the Forest Service changing its ways is that these increased recreational economic benefits flow into the local economy, not to the Forest Service*

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	itself, whereas extractive uses of the national forests contribute directly to Forest Service budgets.) *"Our nation is engaged in a great debate over the real purpose of our national forests, with the weight of public opinion swinging more and more strongly toward preservation. Certainly this nation should not be subsidizing logging when it is clear that we understand so little about the functioning of these enormously complex and ancient forest ecosystems that provide millions of people with clean air and water, as well as homes for a myriad of plants and wildlife that can live nowhere else."* **FS Response:** The cited reference is opinion commentary supporting the end to commercial logging on National Forests. This subject has already been addressed in numerous responses above (#5, # 9, #52, and #53).
Slaymaker, Olav. Assessment of the Geomorphic Impacts of Forestry in British Columbia AMBIO: A Journal of the Human Environment 29(7):381-387. 2000	Opposing View #60: *"Timber harvesting in British Columbia influences (a) forest hydrology; (b) fluvial geomorphology; (c) terrain stability; and (d) integrated watershed behavior. Impacts on forest hydrology are well understood and include increased average runoff, total water yield, increased storm runoff and advances in timing of floods. Stream channels and valley floors are impacted differently by fine sediment, coarse sediment and large woody debris transport. Terrain stability is influenced through gully and mass movement processes that are accelerated by timber harvesting. Impacts on integrated watershed behavior are assessed through disturbed sediment budgets and lake sediments."* **FS Response:** The referenced document is consistent with other science used and cited in the Telegraph EIS to develop design features to minimize the effects of the selected actions on water resources. The article speaks to effects on runoff, water yield, peak flows, sediment and wood transport, and mass movement (landslides). The article suggests that following Forest Practice Act codes (in British Columbia) can significantly minimize these impacts. The Telegraph Vegetation Project is located on soil types and landforms that are much more stable than those typically found in coastal British Columbia, but would employ Forestry Best Management Practices to protect water resources.
Stahl, Andy. Reducing the Threat of Catastrophic Wildfire to Central Oregon Communities and the Surrounding Environment. Testimony before the House Committee on Resources, August 25, 2003	Opposing View #61: *"In sum, 100 years of fire suppression and logging have created conditions that threaten central Oregon's natural resources and communities."*

Author/Date/Title	Response to literature referenced in opposing views
	"Thus it is inexplicable that the solution proposed by President Bush and some members of Congress emphasizes fire suppression and commercial logging, the very practices that created today's crisis. The federal government continues to attempt to suppress over 99% of all wildland fires. The Forest Service continues to measure its success not in terms of ecosystems restored, but in fires put out. The President's Healthy Forest Initiative, as embodied in H.R. 1904, promotes commercial logging at the expense of citizen participation and oversight of the forests we own." **FS Response:** The cited reference is opinion commentary written over 13 years ago during the previous presidential administration. The Telegraph Vegetation Project is not being proposed under the authority of the Healthy Forests Restoration Act (H.R. 1904). The emphasis of the Telegraph Vegetation Project is to meet the purpose and need. Prescribed fire is an integral component of the project, and planning has taken place with extensive public participation.
Strickler, Karyn and Timothy G. Hermach, "Liar, Liar, Forests on Fire: Why Forest Management Exacerbates Loss of Lives and Property" Published by CommonDreams.org, October 31, 2003	Opposing View #62: *"Fire, just like insects and disease, are a natural and beneficial part of forest ecosystems and watersheds. Without these natural processes the forest ecosystems quickly degrade. Excessive logging removes and reduces cooling shade adding to the hotter, drier forests along with logging debris creating a more flammable forest. Current "forest management" practices, road building and development cause forest fires to rage for hundreds of miles.* *The Sierra Nevada Ecosystem Project said in a report to the U.S. Congress that timber harvests have increased fire severity more than any other recent human activity. Logging, especially clear cutting, can change the fire climate so that fires start more easily, spread faster, further, and burn hotter causing much more devastation than a fire ignited and burned under natural conditions. If we stop the logging and stop building fire prone developments, we minimize the loss of lives and property suffered by people in fires.* *As long as the people of America let politicians, timber executives, and the Forest Service get away with it - it will not stop. Those corporations that profit will continue to lie, cheat and steal to continue to make more money from our losses. Just like big tobacco."* **FS Response:** The cited article is opinion commentary written nearly 13 years ago criticizing the Healthy

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	Forest Restoration Act. The Telegraph Vegetation project is not being proposed under the authority of the Healthy Forests Restoration Act (H.R. 1904). Please see responses to #4, #10, #16, #25, #26, #31, #32, #36, and #48.
Taxpayers for Common Sense. "From the Ashes: Reducing the Harmful Effects and Rising Costs of Western Wildfires. Washington DC, Dec. 2000.	Opposing View #63: *"The agency's commercial timber program can contribute to the risk and severity of wildfire in the National Forests, yet Congress devotes nearly one-third of the Forest Service's entire budget to this wasteful program." (pg. 1)* *"Do not utilize the commercial timber program to reduce the risk of fire. Commercial incentives undercut forest health objectives and can actually increase the risk of fire." (pg. 9)* *"Commercial logging, especially of larger, fire-resistant trees, in the National Forests is one of several factors contributing to the risk and severity of wildfire." (pg. 19)* *"Commercial logging and logging roads open the forest canopy, which can have two effects. First, it allows direct sunlight to reach the forest floor, leading to increased evaporation and drier forests.[5] As a consequence, ground fuels (grass, leaves, needles, twigs, etc.) dry out more quickly and become susceptible to fire. Second, an open canopy allows more sunlight to reach the understory trees, increasing their growth.[6] This can lead to weaker, more densely-packed forests." (pgs. 19-20)* *"Congress and the Forest Service continue to rely on the commercial logging program to do something it will never accomplish – reduce fire risk. The commercial logging program is designed to provide trees to private timber companies, not to reduce the risk of fire." (pg. 20)* **FS Response:** This paper made sweeping generalized statements about management of the national forests as a whole. The EA performed site-specific analysis of small watershed in Montana and made informed decisions regarding appropriate management actions. Many of the recommendations in the paper are for national policy changes that are not relevant to project planning at the Ranger District level. The EIS recognizes that timber harvesting may result in increased short-term fire risks, but planned whole-tree yarding, mechanical pile and burning, and broadcast burning would effectively limit logging slash, reducing the intensity of follow-up burns and natural fires. Even though the rate of fire spread may increase in treated

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	stands (due to drying of fast-burning fuels), fire intensity and fire severity would be reduced. The risk of large fires would be reduced.
Thomas, Craig. "Living with risk: Homeowners face the responsibility and challenge of developing defenses against wildfires." Sacramento Bee newspaper, July 1, 2007.	Opposing View #64: *"Indiscriminate logging is not a viable solution to reducing wildfire risk. Logging can actually increase fire danger by leaving flammable debris on the forest floor. Loss of tree canopy lets the sun in, encouraging the growth of brush, increases wind speed and air temperature, and decreases the humidity in the forest, making fire conditions even worse."* **FS Response:** The cited article is opinion commentary written in the aftermath of the 2007 Angora fire that destroyed numerous homes near Lake Tahoe, California. The author suggests that a good fuels management plan focuses on reducing the fuels that ignite and spread wildfire while keeping the large, older trees that are resistant to fire. He cautions against a one-size-fits-all fuels reduction prescription. Site-specific assessments were completed to determine appropriate treatments to achieve desired conditions, including the reduction of fuels. Also see responses to #24 and #28 above.
University of California; SNEP Science Team and Special Consultants 1996 "Sierra Nevada Ecosystem Project: Final Report to Congress" Volume 1, Chapter 4 – Fire and Fuels.	Opposing View #65: *"Timber harvest, through its effects on forest structure, local microclimate, and fuels accumulation, has increased fire severity more than any other recent human activity."(pg.62)* **FS Response:** The quote is from the 1996 "Sierra Nevada Ecosystem Project: Final Report to Congress" Chapter 4 (Fire and Fuels) in a list of "Critical Findings." The comment was made by the authors specifically in context of the Sierra Nevada Mountain Range. They discuss the findings in the body of the chapter on page 64, describing the historic timber harvests as: *"The rapid influx of settlers into California following the discovery of gold, however, initiated more profound changes in the role of fire in Sierra Nevada ecosystems. Logging was undertaken initially to supply the mines and later to support the growing population of the new state. Timber volumes harvested in the Sierra Nevada continued to increase into the twentieth century, reaching a peak in the 1970s and 1980s. Typically, loggers harvested fire-resistant species and large trees, and these were replaced by greater numbers of much more fire-susceptible smaller trees. This pattern of biomass removal contrasted markedly with that of presettlement surface fires, which tended to kill (and later consume) small trees and leave many large trees*

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	to survive. Large quantities of debris left after logging led to severe fires, establishing vegetation patterns still evident today. A new pattern of ignitions, characterized in part by careless and indiscriminate burning, was introduced by miners, sheepherders, settlers, and loggers." The historic logging practices described above, and its effects, bears little relationship to the vegetation and fuels treatments which would be followed by fuels reduction activities for the Telegraph Vegetation Project. The fire regimes in California described in this article are substantially different from those found in the Telegraph Creek drainage. As a result, this opposing view has no relevance to the Telegraph Vegetation Project.
Vincent, James W. Ph.D., Daniel A. Hagen, Ph.D., Patrick G. Welle Ph.D. and Kole Swanser. 1995. Passive-Use Values of Public Forestlands: A Survey of the Literature. A study conducted on behalf of the U.S. Forest Service.	Opposing View #67: *"The development of sound forest-management policies requires that consideration be given to the economic benefits associated with competing uses of forest resources. The benefits that may be provided under different management regimes include both use values (such as those provided by timber harvesting and recreation) and passive-use (or nonuse) values, including existence value, option value and quasi-option value. Many of these benefits are not revealed in market transactions, and thus cannot be inferred from conventional data on prices and costs."* **FS Response:** This article cited is an opinion paper offering review and comment regarding the state of economic research pertaining to the nonuse or passive values of forests. The article addresses the implication of the many studies relating to the management of public forestlands in the Columbia River Basin in particular and forests of the Pacific Northwest. This article illustrates that timber harvesting, for example, produces economic goods primarily in the form of wood products. On the other hand, forestlands are managed for recreation opportunities, watershed protection, and biodiversity, and these goods provide a value, which can be characterized as passive-use values. The article identifies valuation methods for estimating the economic value of environmental goods. The article reviews four studies that attempt to estimate the total value derived from both use and passive-use values and identifies the strengths and weaknesses of each study. The article concludes that economic research should not ignore passive use values and by ignoring these values future studies may seriously understate the

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	benefits associated with the preservation of wilderness areas, wildlife, old forests, and other goods associated with preservation. In the absence of this information, the only conclusions that one is able to reach would be very general in nature. This article is not relevant to the project since it simply offers opinion regarding the development of future economic studies and that the methodological estimations used in future studies should not ignore the importance of passive-use values.
Voss, René "Getting Burned by Logging," July 2002 The Baltimore Chronicle	Opposing View #68: *"Unfortunately, there are number of massive logging proposals, disguised as hazardous fuels treatments, that have put environmentalists at odds with the Forest Service. Nearly all of these proposals focus primarily on the removal of mature and old-growth trees. These proposals continue even with overwhelming evidence that commercial logging is more of a problem than a solution. There's simply a cognitive disconnect between the Forest Service's scientists and its timber sale planners, whose budgets are dependent upon selling valuable mature trees.* *Ironically, this very type of logging, experts inform us, is likely to increase, not decrease, the frequency and severity of wildland fires.* *In the Forest Service's own National Fire Plan, agency scientists warned against the use of commercial logging to address fire management. The report found that 'the removal of large, merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk."* **FS Response:** The cited article is opinion commentary written 16 years ago in support of the National Forest Protection and Restoration Act, which would eliminate commercial logging on Federal public lands. This bill did not pass into law. Large, mature trees will be retained in the silviculture prescriptions. All stands that meet accepted old growth definitions will be reserved. Natural and activity-generated slash will be treated.
Wuerthner, George. "Logging, thinning would not curtail wildfires" The Eugene Register-Guard, December 26, 2008	Opposing View #69: *"Another surprising finding is that mechanical fuels treatment, commonly known as logging and thinning, typically has little effect on the spread of wildfires. In fact, in some cases, it can increase wildfires' spread and severity by increasing the fine fuels on the ground (slash) and by opening the forest to greater wind and solar penetration, drying fuels faster than in unlogged forests."* **FS Response:** The citation is opinion commentary that was written in response to another guest viewpoint printed in an Oregon newspaper. Ample evidence

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	suggests that thinning followed by treatment of the surface fuels can be used to modify fire intensity and severity (please see response to #25 above). The Telegraph Vegetation EIS recognizes that timber harvest may temporarily increase fire hazard but prescribed burning following harvest will reduce surface fuels. Modeling described in the Fire and Fuels section of the EIS suggests that following all treatments fire intensity and severity will be reduced under normal summer conditions over the pre-treatment condition.
Wuerthner, George "Who Will Speak For the Forests?" NewWest, January 27, 2009	Opposing View #70: *"Logging equipment compacts soils. Logging removes biomass critical to future soil productivity of the forest. Logging disturbs sensitive wildlife. Logging typically requires roads and skid trails which create chronic sources of sedimentation that degrades water quality and aquatic organism habitat. Logging roads and skid trails are also a major vector for the spread of weeds. Logging disrupts nutrient cycling and flows. Logging can alter species composition and age structure (i.e. loss of old growth). Logging can alter fire regimes. Logging can change water cycling and water balance in a drainage. The litany of negative impacts is much longer, but suffice it to say that anyone who suggests that logging is a benefit or benign is not doing a full accounting of costs."* *Those who suggest that logging "benefits" the forest ecosystem are using very narrow definitions of "benefit." Much as some might claim that smoking helps people to lose weight and is a "benefit" of smoking."* **FS Response:** Impacts of the proposed timber harvest activities on various resources were analyzed and disclosed in the Telegraph FEIS. Also see response to #44 above.
Ziemer, Robert R. Effect of logging on subsurface pipeflow and erosion: coastal northern California, USA. Proceedings of the Chengdu Symposium, July 1992. IAHS Publication. No. 209, 1992.	Opposing View #71: *"After logging, peak pipeflow was about 3.7 times greater than before logging."* *"The use of heavy logging equipment was expected to compact the soil, reduce infiltration rates, and increase surface runoff. In addition, heavy equipment might collapse some of the subsurface pipes, increasing local pore water pressure and the chance of landslides (Sidle, 1986)."* **FS Response:** The cited article is about a study conducted in coastal northwestern California to determine changes in soil pipeflows after clearcutting. This study appears similar to the one referenced in Opposing View #33 above. The article states further research is needed to clarify the effect of logging on

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	peak pipeflow and pipe sediment during large storms. This study has little, if any, relevance to the Telegraph Vegetation Project since climatic conditions are vastly different. Proposed yarding systems, design features, Soil and Water Conservation Practices (SWCPs) and Best Management Practices (BMPs) are included in the Telegraph Vegetation Project EIS. The soils analysis and mitigation anticipated impacts to the soils resource. Also see responses to #19 and #33 above.
Letter to the President of the United States. April 16, 2002. 221 signatories. Subject: Letter requests President Bush to end commercial logging on National Forests and begin restoration activities.	Opposing View #72*: "As conservation-minded scientists with many years of experience in biological sciences and ecology, we are writing to bring your attention to the need to protect our National Forests. Logging our National Forests has not only degraded increasingly rare and valuable habitat, but also numerous other services such as recreation and clean water."* *"Unfortunately, the past emphasis of management has been on logging and the original vision for our National Forests has failed to be fully realized. During the past several decades, our National Forests have suffered from intense commercial logging. Today almost all of our old growth forests are gone and the timber industry has turned our National Forests into a patchwork of clearcuts, logging roads, and devastated habitat."* *"It is now widely recognized that commercial logging has damaged ecosystem health, clean water, and recreational opportunities-- values that are highly appreciated by the American public. The continued logging of our National Forests also wastes American tax dollars and diminishes the possibilities of future economic benefits. The Forest Service and independent economists have estimated that timber accounts for only 2.7 percent of the total values of goods and services derived from the National Forests, while recreation and fish and wildlife produce 84.6 percent."* **FS Response:** In this 16-year-old cited letter, the descriptions of environmental harm are general and outdated. Through application of recent and best scientific thought on the protection of natural resources, the Forest Service has designed a site-specific project that creates positive change to the vegetative landscape, meets the purpose and need statements to a large degree, while meeting the standards of acceptable effects for each resource. These standards of acceptable effects are based on the best available scientific literature.

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	The Telegraph DEIS and resource reports in the Project File describe the potential effects of proposed timber harvest on all the resources found in the project area (EIS, Chapter 3). Project design, best management practices, and resource protection measures will avoid or minimize potential negative effects and actually enhance many of the resources.
Pimm, Stuart, Gary Meffe, Arthur Partridge, David Montgomery, Seth Reice, Henry Mushinsky. 1998. Scientists Support the Act to Save America's Forests (S. 977, HR 1376). Press Conference with Senator Robert Torricelli, April 28, 1998, U.S. Capitol.	Opposing View #73: *"Recently, so called "salvage" logging has increased on national forests in response to a timber industry invented "forest health crisis" which points the finger at normal forest processes of fire, fungi, bacteria, insects and other diseases. In fact the crisis in the national forests is habitat destruction caused by too much clearcutting.* *My long-term studies of forest diseases in Idaho show the loss by disease and insect activity in all age classes of forests to be less than or slightly more than 1 percent per year over the past thirty-eight years. These findings are consistent with Forest Service national level data.* *Forests are structured systems of many life forms interacting in intricate ways and disturbances are essential to their functioning. It's not fire disease fungi bacteria and insects that are threatening the well being of forests. Disease, fire, windthrow, and other disturbances are a natural part of the forest ecosystem and assist in dynamic processes such as succession that are essential to long term ecosystem maintenance. The real threat facing forests are excessive logging, clearcutting and roadbuilding that homogenize and destroy soil, watersheds and biodiversity of native forests."* **FS Response:** The cited letter is a dated opinion commentary in support of the Act to Save America's Forests, which did not pass into law. It is not the intent of the Telegraph Vegetation Project to prevent insect, fire or other natural disturbance, but to improve resilience in stands, including those with extensive mortality. This level of mortality was not caused by clearcutting, but by lack of disturbance over time.
Elliot, W.J.; Page-Dumroese, D.; Robichaud, P.R. 1999. The effects of forest management on erosion and soil productivity. In: Soil Quality and Soil Erosion. Boca Raton, FL: CRC Press. 195-208.	Opposing View #74: **"**CONCLUSIONS. *In our overview of the impacts of forest management activities on soil erosion and productivity, we show that erosion alone is seldom the cause of greatly reduced site productivity. However, erosion, in combination with other site factors, works to degrade productivity on the scale of decades and centuries. Extreme disturbances, such as wildfire or tractor logging, cause the loss of nutrients, mycorrhizae, and organic matter. These combined losses reduce long-term site productivity and*

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	may lead to sustained periods of extended erosion that could exacerbate degradation. *Managers should be concerned with harvesting impacts, site preparation disturbances, amount of tree that is removed, and the accumulation of fuel from fire suppression. On erosion-sensitive sites, we need to carefully evaluate such management factors."* **FS Response:** This paper is a general overview of soil productivity science and generalizations regarding potential effects from common forestry practices. The potential effects to soil are disclosed in the Telegraph DEIS. The Telegraph Vegetation Project will maintain soil productivity and comply with Region 1 soil quality standards as well as other pertinent laws and regulations. Project design, resource protection measures and best management practices will minimize soil disturbance and ensure that productivity is maintained.
Forests Monitor, Environmental Impacts of Logging, 2006	Opposing View #75: "Logging often destroys natural habitats, resulting in the loss of biodiversity and sometimes leading to the local, and possibly global, extinction of species. Although estimates of the rates of loss vary, few deny the reality of the current losses of both flora and fauna." According to a joint report by the Worldwide Fund for Nature and the Sarawak Forest Department, "Logging causes immediate forest disturbances, long-term habitat changes (e.g. damage to food trees and salt-licks), increased hunting by timber company workers and availability of logging roads as hunting routes. The destruction of wildlife from habitat loss must be recognised to be on an enormous scale".178 In Central Africa, the opening-up of the forest by logging facilitates the illegal hunting of wildlife, including protected species such as primates, and is leading to a decline in wildlife populations. Deterioration in water quality has caused a decline in fish stocks and has affected aquatic biological diversity because indigenous animals and plant life are highly vulnerable to oxygen depletion, suspended particulate matter and a lack of light. Even so called selective logging severely affects the complex and rich biodiversity of forests through excessive damage to residual stands, destruction of other plant and tree species and the creaming-off of species which are the most valuable for timber. An FAO study in Malaysia has shown that as much as 50% of the standing forest may be damaged and the surface soil destroyed when up to 30% of the ground surface is

Author/Date/Title	Response to literature referenced in opposing views
	exposed. During silvicultural treatment in logging operations in Sarawak, so-called uneconomic forest species are deliberately poisoned. This reduces the complexity and species diversity of the tropical forests to only 10% of the original condition, resulting in the systematic elimination of tree genetic resources and contamination of the environment. According to the IUCN the most frequently recorded of all threats to globally endangered tree species is 'felling'. **FS Response:** Impacts to wildlife and soils are analyzed in the Telegraph EIS. The remainder of the issues are not relevant to the Telegraph Vegetation Project, as access to various areas will be controlled during logging, temporary roads obliterated following treatment operations, and current access limitations maintained. Logging practices in Malaysia are not applicable to the Telegraph Vegetation Project.
Hansen, Chad, Ending Timber Sales on National Forests: THE FACTS (FY '97) Published in the *Earth Island Journal*, 1999.	Opposing View #76 - Major report findings: 1) If we ended the timber sales program on national forests and redirected the logging subsidies we could provide over $30,000 for each public lands timber worker for retraining or ecological restoration work - - and still have over $800 million left over for taxpayer savings in the first year alone. 2) We don't need to log national forests for our timber supply, given the fact that the timber cut annually from national forests nationwide now comprises only 3.3% of this nation's total annual wood consumption, and less than 4% of the sawtimber used for construction. 3) Logging on national forests INCREASES the risk of forest fires more than any other human activity. 4) A bipartisan nationwide poll conducted in 1998 found that 69% of Americans now oppose allowing timber companies to log our national forests. **FS Response**: An economic analysis of the Telegraph Vegetation Project is contained in the EIS. The economics of the national timber program is beyond the scope of this analysis. See responses to Timber Harvest Opposing Views #27 and #56.
WUERTHNER, GEORGE, "Why are Conservation Groups Advocating Logging Public Forests?" Published by *Counterpunch*, September 27, 2012	Opposing View #77*: "However, I believe that their support for logging represents a failure to challenge many of the flawed assumptions that are guiding federal logging programs and in some cases even repeating many of the same pejorative language helps to undermine in the long term conservation efforts. After all if the public believes our forests are sick and unhealthy; that logging will cure them; that logging will*

Author/Date/Title	Response to literature referenced in opposing views
	preclude wildfires and eliminate beetle kill, and that rural economies are dependent on public lands logging to survive, than they are, in my view, contributing to the wrong message." *"There may be legitimate rationales for logging, but it's not the one usually given for logging public forests today. Indeed, the major justifications given for logging public lands is typically some social or ecological benefit-to reduce fires, clean up bug killed trees, fix watersheds, restore forest health or provide for "economic stability" to rural communities. In far too many cases, all of these are just cover to hide the main reason for logging-to maintain the local timber industry at the expense of our forest's ecological integrity and taxpayer dollars."* **FS Response:** This is an opinion piece about conservation group's support of forest restoration projects. The purpose and need for the Telegraph Vegetation Project is described in the EIS.
"Stop Drilling and Logging on Federal Lands While the Public is Kept Out" A petition targeted for Secretary of the Interior Sally Jewel and Secretary of Agriculture Tom ViIsack Posted at *FORCECHANGE.COM*, 2013	Opposing View #78: *"Because of the current government shutdown, the public is being kept out of all National Parks and many other federal lands. But ironically, oil, mineral, and timber companies are still allowed to drill, mine, and log on federal lands while the shutdown is going on. Officials in the US Department of Interior and Department of Agriculture, which oversee National Park and National Forest lands respectively, have given us an unusually clear glimpse of where their priorities lie. Federal lands are supposed to be managed for the benefit of the American people, and resource extraction shouldn't be going on while the public is barred from our National Parks.* *During the shutdown, which was caused because Congress has been unable to pass a budget, almost all "nonessential" federal government services are temporarily unavailable. The fact that the Departments of Interior and Agriculture have apparently found the resources to keep public lands open to drilling and logging, but can't keep National Parks and other recreational areas open, shows resource extraction in being prioritized over public access to our lands. It's time for this to change."* **FS Response:** This petition to stop operations on Federal Land during the Government Shutdown of 2013 is irrelevant to the Telegraph Vegetation Project.
Conservation Groups Look to Hold Forest Service Accountable for Middle East Fork Logging Plan Published by *Lowbagger,* April 25, 2006	Opposing View #79: *"We tried for the past 18-months to work with Supervisor Bull to implement an effective community fuel reduction project up the East Fork. Our proposal - which was favored by 98% of the 13,000*

Author/Date/Title	Response to literature referenced in opposing views
	public comments received on this project would have reduced fuels on 1,600 acres of national forest land, pumped $1 million into the local economy and provided 45 local jobs. Unfortunately, this common sense plan was rejected by Supervisor Bull," stated Koehler." *"The attempt by Supervisor Bull to cover-up public knowledge of excessive soil damage in the project area by altering the best-available scientific data and by purging project file documents related to soils is a blatant attempt to white-wash this damaging proposal and cannot go unchallenged," explained Campbell."* *"The East Fork project area is still recovering from historic Forest Service mismanagement including clearcutting, terracing and excessive roadbuilding. 33% of the entire analysis area has already been logged. The analysis area averages 5.2 miles of road per square mile, not including jammer roads. These roads contribute 151.2 tons of sediment per year to streams within the project area. The East Fork, running through the middle of the project area, is officially classified as an impaired stream because its excessive sediment load has compromised its ecological integrity. Several watersheds already exceed established thresholds for clearcutting, which threatens stream channel stability with increased runoff."* **FS Response:** This opinion piece refers to the selection of an alternative in a timber sale in 2006, and is irrelevant to the Telegraph Vegetation Project.
Higgins, Margot, "National forest logging is bad business, study says" Posted on *CNN.com-Nature*, March 16, 2000	Opposing View #80: *"Logging on national forest land creates more economic harm than good"*, according to a recent study by the National Forest Protection Alliance and the Forest Conservation Council. The 75-page report, three years in the making, notes there are dramatic economic and social losses when forests are logged under the U.S. Forest Service's timber-sale program. The report, *"The Economic Case Against Logging National Forests," states that national forest lands are far more valuable to rural communities when trees are left standing, and that the federal logging program creates billions of dollars in unaccounted costs for communities, businesses, and individuals. This expense comes in addition to timber industry subsidies, which cost American taxpayers approximately $1.2 billion a year."* *"Talberth said both reports lend support to current efforts in Congress to end the federal timber-sale program. Introduced by Rep. Cynthia McKinney (D-Georgia) in April 1999, the National Forest Protection*

Author/Date/Title	Response to literature referenced in opposing views
	and Restoration Act (H.R. 1396) would put an end the federal timber-sale program." **FS Response:** An economic analysis of the Telegraph Vegetation Project is contained the EIS. The economics of the national timber program is beyond the scope of this analysis.

Telegraph Vegetation Project
Review of References Cited in Comments to the Environmental Assessment

Attachment #3
Dick Artley
"Harvesting Trees to Reduce Fuels is not only Ineffective at Reducing the Risk of Fire Damage to Human Structures but Harms the Forest Ecosystem"

Author/Date/Title	Response to literature cited in opposing views
Agee, James K. The Severe Weather Wildfire-Too Hot to Handle? Northwest Science, Vol. 71, No. 1, 1997	Opposing View #1: *"…large, severe wildfires are more weather-dependent than fuel-dependent…"* **FS Response:** The document is applicable and consistent with literature used in the analysis. Large, severe wildfires are more weather-dependent than fuel-dependent. Climate plays an important role in the intensity and severity of wildfire. This paper does not consider the significance of the fuels complex and the direct correlation to fire intensity/severity. Fuel conditions also affect the intensity/severity and is the only function that can be manipulated to reduce future intensities.
Barry, Glen. 2002. Commercial Logging Caused Wildfires. Portland Independent Media Center, August 2002. http://portland.indymedia.org/en/2002/08/17464.shtml	Opposing View #2: *"The biggest ecological con job in years is being waged by the U.S. Republican party and their timber industry cronies. They are blaming the recent Western wildfires on environmentalists, and assuring the public that commercial logging will reduce the risk of catastrophic wildfires."* **FS Response:** The cited article is 14-year-old commentary opposed to the then Bush Administration's support for fuels reduction under the National Fire Plan. The Telegraph Vegetation Project EIS displays that harvest, thinning, and prescribed burn treatments will effectively modify fire behavior within treated areas and reduce the intensity of a potential wildfire under normal summer conditions. Harvest treatments will retain the largest, most fire-resistant trees. Following harvest activities, the slash will be treated to reduce fire hazard.
Berry, A. 2007. *Forest Policy Up in Smoke: Fire Suppression in the United States*. Property and Environmental Research Center.	Opposing View #3: *"One reason that fuels reduction treatments should be limited is that they may not address the important effects of climate and weather on fire behavior. Some studies suggest that it is drought and warmer temperatures—not fuels*

Author/Date/Title	Response to literature cited in opposing views
	accumulations—that are the major explanatory factors for large fires (O'Toole 2002-2003, Pierce et al. 2004). It is an unrealistic goal to return all forests to historical states, in light of the fact that agencies have no control over drought or temperature." (pgs. 15 – 16) **FS Response:** The cited article is opinion commentary about fire suppression policies on Federal lands and recommends changes in funding for suppression efforts to curb spending. The author also recommends that efforts should be focused on fuels reduction and restoring fire-adapted ecosystems, as appropriate for local conditions (page 19). A combination of prescribed burning and mechanical treatments is prescribed to restore stand structures and compositions more likely to support low- and mixed-severity wildfire so the landscape as a whole can experience the full spectrum of wildfire intensities as it did in the past. These stand structures and compositions also reduce susceptibility to bark beetles. It is well established that potential fire behavior (intensity) and severity (effect) are dependent on the interaction between fuel, weather, and physical setting (Graham et al. 2004). Any particular wildfire's growth and behavior are unique because of the infinite combinations of these factors that can occur over spatial and temporal scales (Graham et al. 2004). Of these three factors, the only thing humans can alter through management is fuel.
Bessie, W. C. Ph.D. and E. A. Johnson. 1995. The Relative Importance of Fuels and Weather on Fire Behavior in Subalpine Forests. Ecology, Vol. 76, No. 3 (Apr., 1995) pp. 747-762. Published by: Ecological Society of America	Opposing View #4: *"Fire intensity was correlated to annual area burned; large area burned years had higher fire intensity predictions than smaller area burned years. The reason for this difference was attributed directly to the weather variable frequency distribution, which was shifted towards more extreme values in years in which large areas burned. During extreme weather conditions, the relative importance of fuels diminishes since all stands achieve the threshold required to permit crown fire development. This is important since most of the area burned in subalpine forests has historically occurred during very extreme weather (i.e., drought coupled to high winds). The fire behavior relationships predicted in the models support the concept that forest fire behavior is determined primarily by weather variation among years rather than fuel variation associated with stand age."*

Author/Date/Title	Response to literature cited in opposing views
	FS Response: The cited article suggests that weather is the primary factor affecting wildfire size in subalpine forests near the boreal forest ecotone in Alberta, Canada. The title of the article clearly states that it focuses on subalpine forests. The Telegraph Vegetation Project vegetation treatments are located within an entirely different forest type: lodgepole pine and Douglas-fir. In the article listed in #1 above, James Agee says that people cite the Bessie and Johnson paper as evidence for what he calls the "weather hypothesis" (all large, severe wildfires are more weather-dependent than fuel-dependent). However, Agee points out that the Bessie and Johnson paper is specific to subalpine forests. He indicates that evidence from studies in other areas suggest that the weather hypothesis should not be generalized to all forest types. See response to #1 above.
Bird, Bryan "Fires Normal Part of Ecology - Fear of fires ungrounded" Mountain View Telegraph, December 20, 2007	Opposing View #5: *"Climatic conditions drive all big fires— not fuels. All substantial fires occur only if there is extended drought, low humidity, high temperatures and, most importantly, high winds. When conditions are "ripe" for a large blaze, fires will burn through all kinds of fuel loads. For this reason, most fires go out without burning more than a few acres; approximately 1 percent of all fires are responsible for about 95 percent to 99 percent of the acreage burned."* *"Under severe conditions, fires burn through all kinds of fuel loads including thinned/logged forests. Contrary to what the U.S. Forest Service has stated about the Ojo Peak Fire, local witnesses have said the fire blew right through the hotter, drier thinned forests where the cooling effect of forest canopy had been removed."* **FS Response:** The cited article is unsupported opinion commentary published in a newspaper in response to another person's previously published viewpoint. In the cited article, the author opposes the construction of a biomass plant near Estancia, New Mexico, and criticizes the previous commenter's statements regarding wildfire risk. The articles themselves are irrelevant to the Telegraph Vegetation Project in Montana. In response to the provided quotation above, it is well established that potential fire behavior (intensity) and severity (effect) are dependent on

Author/Date/Title	Response to literature cited in opposing views
	the interaction between fuel, weather, and physical setting (Graham et al. 2004). Any particular wildfire's growth and behavior are unique because of the infinite combinations of these factors that can occur over spatial and temporal scales (Graham et al. 2004). Of these three factors, the only thing humans can alter through management is fuel. "Severe" or extreme weather conditions can create fire behavior that would burn through or breach most fuel treatments. Thus, realistic objectives for fuel treatments include reducing fire behavior that would lead to undesirable future conditions.
Forests.org. 2002. Bush Fire Policy: Clearing Forests So They Do Not Burn. Forest Conservation News Today, August 27, 2002. http://forests.org/archived_site/today/recent/2002/tiporefl.htm	Opposing View #6: *"The Forest Service is using the fear of wildfires to allow logging companies to remove medium-and large-diameter trees that they can sell, rather than just the small trees and brush that can make fires more severe. There is little evidence to show that such logging will prevent catastrophic fires; on the contrary, logging roads and industrial logging cause wildfires. Bush is a well-known supporter of the timber industry and has accepted huge sums of money from wealthy timber company leaders. He is promoting misinformation about forest fires in order to benefit timber industry campaign contributors."* **FS Response:** The cited article is opinion commentary written in 2002 criticizing then President Bush and his administration's support for fuels reduction (Healthy Forests Initiative). This is dated opinion not applicable to the current administration nor the conditions in the project area that the MPB epidemic has created.
Coe, Nathan J. "Forestry shouldn't be an 'industry' " Durango Herald, February 12, 2011	Opposing View #7: *"As someone with first-hand experience in fire hazard reduction and first-hand knowledge of the forest management field, as well as someone with lifelong roots in the Durango community, I am abhorred by the destruction, nearly amounting to clear cutting, that is taking place around our community under the guise of "fire hazard reduction."* **FS Response:** The cited article is opinion commentary published in a Colorado newspaper criticizing what appears to be ongoing timber harvest near Durango, Colorado, for the purpose of fuels reduction. This article is irrelevant to the Telegraph Vegetation Project in Montana because of the vastly different natural and social conditions found in southwestern Colorado. A combination of

Author/Date/Title	Response to literature cited in opposing views
	prescribed burning and mechanical treatments are prescribed in the Telegraph Vegetation project area to restore stand structures and compositions more likely to support low and mixed severity wildfire.
Author unknown. 2008. Montana: Blackfoot Clearwater Stewardship Proposal is all about selling out to Pyramid lumber. Forest Policy Research web page. http://forestpolicyresearch.com/2008/12/19/blackfoot-clearwater-stewardship-proposal-is-all-selling-out-to-pyramid-lumber/	Opposing View #8: *"First, most large fires are climatic/weather driven events, not fuels driven. Extended drought, high winds, high temperatures and low humidity enable fires to burn through all fuel loadings. Many of the large Western fires in recent years were in forests that had been previously logged and/or thinned, with little apparent effect on fire spread or severity."* **FS Response:** The cited article is unsupported opinion commentary that questions the effectiveness of thinning to reduce fire hazard. Please see responses to #1, #3, #4, #5, and #9. Fuel modeling suggests the reduction of surface and ladder fuels along with the separation of tree crowns prescribed in the Telegraph Vegetation Project vegetation treatments will decrease the risk of high-severity crown fire.
Author unknown. 2008. California: Too often thinning treatments tend to increase fire hazards. Forest Policy Research web page. http://forestpolicyresearch.com/2008/12/19/california-too-often-thinning-treatments-tend-to-increase-fire-hazards/	Opposing View #9: *"..most large fires are climatic/weather driven events, not fuels driven. Extended drought, high winds, high temperatures and low humidity enable fires to burn through all fuel loadings."* **FS Response:** The provided quotation is not contained within the cited article. This article cites a study that suggests that mechanical thinning followed by prescribed fire to reduce surface fuels is effective in creating stands that are more resistant to severe fire effects. The article emphasizes the importance of treating surface fuels with prescribed fire following thinning activities to reduce future fire severity and spread. The Forest Service agrees.
Frey, David "Logging Won't Halt Beetles, Fire, Report Says" NewWest.net, 3-03-10	Opposing View #10: *"The primary driver of fire is not beetle kill. It's climate," said Barry Noon, a wildlife ecology professor at Colorado State University and an author of the report. "It's drought and temperature."* *"The report was authored by Noon; Clark University professor Dominik Kulakowski ; Scott Black, executive director of the Xerces Center for Invertebrate Conservation and Dominick DellaSala, president and chief scientist for the National Center for Conservation Science and Policy."*

Author/Date/Title	Response to literature cited in opposing views
	FS Response: This article cites a report entitled, "Insects and Roadless Forests: A Scientific Review of Causes, Consequences, and Management Alternatives" issued by a conservation group that specifically addresses a proposal to exempt national forest roadless areas in Colorado from protections under the 2001 Roadless Area Conservation Rule. The authors suggest that mechanical treatments in roadless areas will not likely reduce forest susceptibility to beetle outbreaks or reduce the risk of fires, especially the risk of fires to communities. Please also see responses to #1, #3, #4, #5, and #8.
Gable, Eryn. 2010. "Battling beetles may not reduce fire risks – report" The Xerces Society Land Letter, March 4, 2010	Opposing View #11: *"Extensive areas of dead trees have understandably led to widespread concern about the increased risk for forest fires," said Dominik Kulakowski, one of the report's authors and a professor of geography and biology at Clark University in Worcester, Mass. "This is a logical concern, but the best available science indicates that the occurrence of large fires in lodgepole pine and spruce-fir forests is mainly influenced by climatic conditions, particularly drought."* **FS Response:** This article cites the same report as does the article in #10 above, please see above response.
Gorte, Ross W. 2008. "Wildfire Damages to Homes and Resources: Understanding Causes and Reducing Losses" A CRS report for Congress, June 2, 2008	Opposing View #12: *"Reducing burnable biomass, however, does not eliminate wildfires, because fuel reduction does not directly alter the dryness of the biomass or the probability of an ignition."* **FS Response:** The cited article is a report prepared for Congress that provides an overview of the nature of wildfires followed by a discussion of the options for protecting structures, wildlands, and natural resources from wildfires. Some of the options discussed include those prescribed in the Telegraph Vegetation project (e.g., thinning and prescribed burning). In response to the quotation provided, elimination of wildfire is not an objective. At the beginning of the paragraph where this quotation is found, the author states that the principal goal for land and resource protection is to reduce the damages caused by wildfire, which he says can be best achieved by reducing burnable biomass.

Author/Date/Title	Response to literature cited in opposing views
GAO. 1999. Western National Forests: A cohesive strategy is needed to address catastrophic wildfire threats. Report to the subcommittee on Forests and Forest Health, Committee on Resources, House of Representatives. April. Available at www.gao.gov. 60 p. Cited in attachment as: Government Accounting Office "Western National Forests: A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats" GAO/RCED-99-65	Opposing View #13: *"Most of the trees that need to be removed to reduce accumulated fuels are small in diameter and have little or no commercial value."* *"Mechanically removing fuels (through commercial timber harvesting and other means) can also have adverse effects on wildlife habitat and water quality in many areas. Officials told GAO that, because of these effects, a large-scale expansion of commercial timber harvesting alone for removing materials would not be feasible. However, because the Forest Service relies on the timber program for funding many of its activities, including reducing fuels, it has often used this program to address the wildfire problem. The difficulty with such an approach, however, is that the lands with commercially valuable timber are often not those with the greatest wildfire hazards."* **FS Response:** The literature citation is a report to Congress from the Government Accounting Office that recommends the development of a cohesive strategy for reducing and maintaining accumulated fuels on national forests of the interior West at acceptable levels. The quotes provided by the commenter are describing what the GAO identifies as some of the barriers to the effective action of addressing catastrophic wildfire (page 7). This literature reference is not relevant to the Telegraph Vegetation Project because it recommends a national policy for addressing wildfire and fuel conditions across the interior West, which is not within the scope of this project. The Telegraph Vegetation project proposes various site-specific vegetation treatments including prescribed burning, timber harvest, and thinning to improve forest stand resilience and reduce hazardous fuels.
Hanson, Chad, "Commercial Logging Doesn't Prevent Catastrophic Fires, It Causes Them." Published in the New York Times, May 19, 2000	Opposing View #14: *"In April 1999, the General Accounting Office issued a report that raised serious questions about the use of timber sales as a tool of fire management. It noted that "most of the trees that need to be removed to reduce accumulated fuels are small in diameter" -- the very trees that have 'little or no commercial value.' "* *"As it offers timber for sale to loggers, the Forest Service tends to 'focus on areas with high-value commercial timber rather than on areas with high fire hazards,' the report said. Its sales include 'more large, commercially valuable trees' than are*

Author/Date/Title	Response to literature cited in opposing views
	necessary to reduce the so-called accumulated fuels (in other words, the trees that are most likely to burn in a forest fire).” *“The truth is that timber sales are causing catastrophic wildfires on national forests, not alleviating them. The Sierra Nevada Ecosystem Project Report, issued in 1996 by the federal government, found that ‘timber harvest, through its effects on forest structure, local microclimate and fuel accumulation, has increased fire severity more than any other recent human activity.’ The reason goes back to the same conflict that the G.A.O. found: loggers want the big trees, not the little ones that act as fuel in forest fires.”* *“After a ‘thinning’ timber sale, a forest has far fewer of the large trees, which are naturally fire-resistant because of their thick bark; indeed, many of these trees are centuries old and have already survived many fires. Without them, there is less shade. The forest is drier and hotter, making the remaining, smaller trees more susceptible to burning. After logging, forests also have accumulations of flammable debris known as "slash piles" -- unsalable branches and limbs left by logging crews.”* **FS Response:** The Sierra Nevada Framework is specific to more dry (xeric) forest communities in California and not the inland Northern Rockies. The Telegraph Vegetation Project is not intended to “prevent catastrophic fires,” but to provide safer conditions for firefighters in a wildfire event.
Hermach, Tim. 2007. “The Skinny on Thinning, Should we save the forest from itself?” Published by the Eugene Weekly Viewpoint, 11/1/07	Opposing View #15: *“Emerging science demonstrates that the real culprit for creating more wildfires — including southern California's blazes — is not "fuels" but climate and weather. Climate change simply means we must learn to live with more wildfires.* *Humankind can be pretty smart (we made it to the Moon), but we can also be pretty stupid (we're destroying the lungs of the planet for profit). One thing, however, is certain: Mother Nature knows best. So let's be responsible and stop logging the publicly owned forests, let them recover and let God and nature back in.”* **FS Response:** The cited article is unsupported opinion commentary written by the executive director of the Native Forest Council in opposition to fuels reduction treatments that involve commercial tree removal. The opposing view is

Author/Date/Title	Response to literature cited in opposing views
	very similar to others already presented in the attachment. Please see responses to #1, #3, #4, #5, and #8.
Huff, Mark H.; Ottmar, Roger D.; Alvarado, Ernesto; Vihnanek, Robert E.; Lehmkuhl, John F.; Hessburg, Paul F.; Everett, Richard L. 1995. Historical and current forest landscapes in eastern Oregon and Washington. Part II: Linking vegetation characteristics to potential fire behavior and related smoke production Gen. Tech. Rep. PNW-GTR-355. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 43 p. (Everett, Richard L., team leader; Eastside forest ecosystem health assessment; Hessburg, Paul F., science team leader and tech. ed., Volume III: assessment.).	Opposing View #16: *"In general, rate of spread and flame length were positively correlated with the proportion of area logged (hereafter, area logged) for the sample watersheds. Correlation coefficients of area logged with rate of spread were > 0.57 for five of the six river basins (table 5). Rate of spread for the Pend Oreille and Wenatchee River basins was strongly associated (r-0.89) with area logged. Correlation of area logged with flame length were > 0.42 for four of six river basins (table 5). The Deschutes and Methow River basins showed the strongest relations. All harvest techniques were associated with increasing rate of spread and flame length, but strength of the associations differed greatly among river basins and harvesting methods." (pg.9)* *"As a by-product of clearcutting, thinning, and other tree-removal activities, activity fuels create both short- and long-term fire hazards to ecosystems. The potential rate of spread and intensity of fires associated with recently cut logging residues is high, especially the first year or two as the material decays. High fire-behavior hazards associated with the residues can extend, however, for many years depending on the tree. Even though these hazards diminish, their influence on fire behavior can linger for up to 30 years in the dry forest ecosystems of eastern Washington and Oregon."* **FS Response:** The paper referenced (Huff et al. 1995) above was an attempt to compare the potential fire behavior and smoke production of historical and current time periods for forty-nine 5,100 to 13,500 hectare watersheds. It was a landscape-level modeling exercise based upon vegetation type and timber harvest type classification from aerial photo interpretation of historic (1938-1959) and current (1985-1992) aerial photos. The authors used a fuel behavior photo series to assign fuel loading by vegetation type for non-harvested areas and by harvest-type in harvested areas. Due to lack of site-specific information, they assigned a fire behavior photo series that matched older logging slash to the harvests, assuming in the process that no post-treatment fuels reduction treatments had ever taken place. They also only modeled surface and

Author/Date/Title	Response to literature cited in opposing views
	moderate- to low-intensity understory fires and constant weather and topographic conditions. This study has little relevance to the Telegraph Vegetation Project that proposes various vegetation treatments followed by prescribed burning to reduce natural and activity-generated fuels. The fuels and fire behavior conditions created by the project will differ greatly than that modeled by Huff et al. (1995). Under normal summer conditions, fuel modeling indicates that these treatments will effectively modify fire behavior and reduce the intensity of a potential wildfire because they will: • increase the probability that wildfire flame lengths would be less than 4 feet (the maximum flame length where direct attack suppression forces may be effective) • change the potential wildfire type from a crown fire to a surface fire that burns the surface fuel layer which lies immediately above the ground fuels but below the tree canopy. It is important to note that the authors of this study recommend that "prescribed fire, along with mechanical measures if hazardous burning conditions exist, can be used for restoration purposes to regulate stand composition, reduce plant competition, and modify fuels to achieve a desired structure. Over time, prescribed fires, natural fires, selective tree harvesting, or a combination thereof can be used to maintain desired conditions and processes" (page 36). The Telegraph Vegetation Project proposes to use a combination of mechanical treatments and prescribed burning to meet vegetation objectives described within the EIS.
Ingalsbee, Timothy. 2000. Commercial Logging for Wildfire Prevention: Facts Vs. Fantasies. Unpublished paper Western Fire Ecology Center.	Opposing View #17: *"The notion that commercial logging can prevent wildfires has its believers and loud proponents, but this belief does not match up with the scientific evidence or history of federal management practices. In fact, it is widely recognized that past commercial logging, road-building, livestock grazing and aggressive firefighting are the sources for "forest health" problems such as increased insect infestations, disease outbreaks, and severe wildfires."* *"How can the sources of these problems also be their solution? This internal contradiction needs*

Author/Date/Title	Response to literature cited in opposing views
	more than propaganda to be resolved. It is time for the timber industry and their supporters to heed the facts, not fantasies, and develop forest management policies based on science, not politics." **FS Response:** The cited article is opinion commentary. "Commercial logging" cannot prevent wildfires which the Forest Service has never said it would. To "prevent" wildfires, one would have to stop all human and natural (i.e., lightning) ignition sources. However, vegetation treatments of all kinds are accomplished to modify fire behavior within treated areas. Ample evidence suggests that fuels treatments can be used to modify fire intensity and severity. Examples of this evidence are: • Ager et al. 2007. A simulation study of thinning and fuel treatments on a wildland-urban interface in eastern Oregon, USA. Landscape and Urban Planning 80 (2007) 292-300. • Carey, Henry, Schumann, Martha. 2003. Modifying Wildfire Behavior – The Effectiveness of Fuel Treatments. National Community Forestry Center. Southwest Region Working Paper 2. • Cram, D.S., T.T. Baker, and J.C. Boren. 2006. Wildland fire effects in silviculturally treated versus untreated stand of New Mexico and Arizona. USDA Forest Service Rocky Mountain Research Station. RMRS-Rp-55. • Dailey et al. 2008. Fire behavior and effects in fuels treatments and protected habitat on the Moonlight Fire. USDA Forest Service, Pacific Southwest Research Station. • Finney et al. 2005. Stand and landscape-level effects of prescribed burning on two Arizona wildfires. Canadian Journal of Forest Research. 35: 1714-1722 • Fites et al. 2007. Fire behavior and effects relating to suppression, fuel treatments, and protected areas on the Antelope Complex Wheeler Fire. USDA Forest Service, Pacific Southwest Research Station. • Fule et al. 2001. Potential fire behavior is reduced following forest restoration treatments. Vance, Regina K.; Edminster, Carleton B.; Covington, W. Wallace; Blake, Julie A. comps. 2001. Ponderosa pine ecosystems restoration and conservation: steps toward stewardship; 2000 April 25–27; Flagstaff, AZ. Proceedings RMRS-P-22. Ogden, UT:

Author/Date/Title	Response to literature cited in opposing views
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Ingalsbee, Timothy Ph.D. 2000. "Money to Burn: The Economics of Fire and Fuels Management, Part One: Fire Suppression". American Lands Alliance position paper June 2000.	Opposing View #18: *"Problems exist with over-generalizing the effects of fire exclusion, and misapplying data derived from short-interval forest ecosystems (e.g. ponderosa pine stands) to long-interval forest ecosystems that have not missed their fire cycles yet and are still within their historic range of variability for stand-replacing fire events (e.g. high elevation lodgepole pine or fir stands)."* **FS Response:** The provided quotation is not found within the cited article. It instead comes from another of Mr. Ingalsbee's articles, titled "Ecological Assessments Should Be Required Prior to Fuels Reduction or Restoration Projects." In the next sentence the author writes, *"Fire/fuels management prescriptions should reflect current conditions, and there should be no treatments without prior collection of site-specific field data."* The Telegraph Vegetation Project is consistent with the author's recommendations. Site-specific assessments have been completed for each treatment area. Silvicultural prescriptions have been tailored to address the existing conditions to meet site-specific objectives. The author also suggests that fuels reduction should be recognized as a means of attaining the goals of ecosystem restoration and protection. The Telegraph Vegetation project is consistent with this assessment as it uses fuels reduction actions to restore forest stand resilience.
Ingalsbee, Timothy, "National Fire Plan Implementation: Forest Service Failing to Protect Forests and Communities" American Lands Alliance Policy Statement, March 2002	Opposing View #19: *"Congress should prohibit the use of commercial timber sales and stewardship contracts for hazardous fuels reduction projects. Commercial logging removes the most ecologically valuable, most fire-resistant trees, while leaving behind highly flammable small trees, brush, and logging debris. The use of "goods for services" stewardship contracts also encourages logging larger, more fire-resistant trees in order to make such projects attractive to timber purchasers. The results of such logging are to increase fire risks and*

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	fuel hazards, not to reduce them. The financial incentives for abusive logging under the guise of "thinning" must be eliminated." **FS Response:** The cited article is a 14-year-old opinion commentary that suggests Congress and the Forest Service adopt the author's fire policy recommendations. Modifying national policies is outside the scope of the Telegraph Vegetation Project. Natural and activity-generated fuels will be treated through prescribed burning or mechanical piling.
Ingalsbee, Timothy Ph.D. "The wildland fires of 2002 illuminate fundamental questions about our relationship to fire." The Oregon Quarterly, Winter 2002	Opposing View #20: *"Thus, the use of commercial logging for fire hazard reduction poses yet another paradox: Logging removes the trees that normally survive fires, leaves behind the trees that are most often killed by fire, increases flammable fuel loads, and worsens fire weather conditions." (pg. 5)* **FS Response:** In the article, immediately following the quote above, the author comments: *"There is a role for strategic thinning of small-diameter understory trees and brush, but thinning should focus on genuinely thin trees, not the thick, tall, mature, and old trees most valuable to wildlife and watersheds. Moreover, thinning proposals should not be falsely advertised as a means of preventing wildfires, but rather, as a means of preparing forests for prescribed and wildland fires."* The article is an opinion piece in which the author provides no supporting material for his conclusions. In the article, he assumes that all "commercial logging for fire hazard" would be "from above" and would leave small trees and slash, increasing fuel loads. Mechanical treatment activities would be followed by fuels treatments. The article supports the intent of the Telegraph Vegetation Project more than it opposes it.
Ingalsbee, Timothy Ph.D. "Fanning the Flames! The U.S. Forest Service: A Fire-Dependent Bureaucracy." Missoula Independent. Vol. 14 No. 24, June 2003	Opposing View #21: *"In the face of growing public scrutiny and criticism of the agency's logging policies and practices, the Forest Service and their enablers in Congress have learned to mask timber sales as so-called 'fuels reduction' and 'forest restoration' projects. Yet, the net effect of these logging projects is to actually increase fire risks and fuel hazards."* *"Decades of encouraging private logging companies to take the biggest, oldest, most fire-resistant trees from public lands, while leaving*

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	behind a volatile fuel load of small trees, brush, weeds, stumps and slash has vastly increased the flammability of forestlands." *"In addition to post-fire salvage logging, the Forest Service and timber industry advocates in Congress have been pushing pre-fire timber sales, often falsely billed as hazardous fuels reduction or 'thinning' projects, to lower the risk or hazard of future wildfires. In too many cases, these so-called thinning projects are logging thick-diameter fire-resistant overstory trees instead of or in addition to cutting thin-sized fire-susceptible understory trees. The resulting logging slash and the increased solar and wind exposure can paradoxically increase the fuel hazards and fire risks."* **FS Response:** This article is opinion commentary and the points made are essentially the same as those in the above-cited articles written by the same author. Please see the responses to #18 to #20.
Ingalsbee, Timothy Ph.D. 2007. "A Reporter's Guide to Wildland Fire." Published by the Firefighters United for Safety, Ethics, and Ecology (FUSE), January 2007	Opposing View #22: *"More than any other recent human activity, the legacy of commercial timber extraction has made public forests more flammable and less resilient to fire. Firstly, clearcut and high-grade logging have historically taken the largest, most fire-resilient, most commercially-valuable trees, and left behind dead needles and limbs (logging debris called "slash"), along with smaller trees and brush that are less commercially valuable but more flammable than mature and old-growth trees. The net effect is to increase the amount of available hazardous fuel."* *"Secondly, the removal of large overstory trees also changes the microclimate of logged sites, making them hotter, drier, and windier, which increases the intensity and rate of spread of wildfires. Third, the creation of densely-stocked even-aged plantations of young conifers made sites even more flammable since this produced a solid mass of highly combustible conifer needles within easy reach of surface flames. These changes in the fuel load, fuel profile, and microclimate make logged sites more prone to high-intensity and high-severity wildfires."* **FS Response:** The first opposing view is not applicable to the Telegraph Vegetation Project as all timber harvest activities would include appropriate slash disposal methods. These methods, such as mechanical piling and subsequent burning of the piles during the right weather

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	conditions, reduce the amount of available hazardous fuel to levels well below those amounts prior to the timber harvest activities. The fire/fuels specialist report clearly demonstrates how the fuel model types are changed from the pre- to post-treatment conditions. In some situations, fuels are indeed temporarily created that would burn at a faster rate of spread, but these fuels are also much easier to control with standard firefighting techniques as the duration and intensity of the burn is so much less than the large, heavy fuels found in the pre-treatment areas.
Ingalsbee, Timothy Ph.D. and Joseph Fox, Ph.D. "Firefighters United for Safety, Ethics, and Ecology (FUSEE): Torchbearers for a New Fire Management Paradigm" A poster presentation at the Third International Fire Ecology and Management Congress, Association for Fire Ecology November 13-17, 2006	Opposing View #23: *"For example, use of taxpayer dollars and resources on deficit timber sales that remove fire-resilient old-growth trees and leave behind untreated logging slash, violate federal environmental laws in planning or implementation, or are deceptively labeled as "fuels reduction" or "forest restoration" projects when they actually increase fuel hazards or degrade ecological integrity, is an ethical as well as an ecological issue. These kind of anti-ecological, unethical forest management projects also adversely affect firefighter and community safety by diverting limited federal dollars away from genuine hazardous fuels reduction activities, and by degrading ecological conditions in ways that increase wildfire rate of spread, intensity, or severity."* **FS Response:** The cited article provides an overview of the FUSEE organization and its mission. The Telegraph Vegetation Project will not harvest stands that meet established old growth definitions. Large, fire-resistant trees will be retained. Activity-generated slash will be treated by prescribed burning.
Keene, Roy "Logging does not prevent wildfires" Guest Viewpoint, the Eugene Register Guard January 11, 2009	Opposing View #24: *"History, not science, refutes the claim that logging helps to prevent forest fires.* *The forests of the West are far more vulnerable to fire due to a century of industrial logging and fire suppression. Logging has removed most of the older, fire-resistant trees from the forests.* *Fire suppression has encouraged many smaller and more flammable trees, brush and dense plantations to fill the holes. Logging has set the forests of the West up to burn big and hot.*

Author/Date/Title	Response to literature cited in opposing views
	FS Response: The article is opinion commentary that was written in response to a guest viewpoint published in an Oregon newspaper. Logging cannot prevent wildfires and the Forest Service has never said it would. However, vegetation treatments of all kinds are done to modify fire intensity and severity within treated areas, which is supported by numerous studies (see literature citations listed in response to #17. The Telegraph Vegetation Project will retain the larger, fire resistant trees and fire-resistant tree species.
Keene, Roy. Restorative Logging? "More rarity than reality" Guest Viewpoint, the Eugene Register Guard March 10, 2011	Opposing View #25: *"Fear of wildfire is heavily used to sell these forest "restoration" schemes. Logging has not been proven, in practice, to reduce fire frequency or intensity. Historically, the largest, most destructive blazes, like the Tillamook conflagration, were caused from logging or fueled by slash. Unlogged forests, cool and shaded, are typically more fire resistant than cut over, dried-up stands choked with slash and weeds.* *Large-scale logging (by any name) has devalued our forests, degraded our waters, damaged soils, and endangered a wide variety of plants and animals. How will the current round of politically and environmentally propelled 'restorative' logging proposals differ, in practice, from past logging regimes?"* **FS Response:** The article is opinion commentary that was printed in an Oregon newspaper. The Tillamook Burn that the author refers to was a series of large forest fires in the northern Oregon Coast Range mountains 50 miles west of Portland. It began in 1933, and struck at 6-year intervals through 1951, burning a combined total of 355,000 acres. The largest of the four fires started in August 1933, within a logging operation. Near record weather conditions with a 104º temperature and relative humidity of about 20 percent combined with dry fuel conditions contributed to the rapid growth and high intensity and severity of the fire. The subsequent fires in 1939, 1945, and 1951 primarily reburned the area affected by the first fire. The harvest proposed in the Telegraph Vegetation Project differs greatly from the logging that occurred in the Pacific Northwest in the 1930s. In the 1930s, it is likely that slash was rarely, if ever, treated. The Telegraph Vegetation Project will

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	treat the natural and activity-generated slash. The larger, fire-resistant trees will be retained.
Kelly, Steve. 2007 "Cheap Chips, Counterfeit Wilderness: Greenwashing Logging on Montana's Biggest National Forest." December 10, 2007. http://www.counterpunch.org/2007/12/10/cheap-chips-counterfeit-wilderness/	Opposing View #26: *"There is a gathering body of evidence that large wildfires are not determined by "unnatural" fuel loading. Lodgepole pine, subalpine fir, and aspen depend on infrequent, stand-replacing, high intensity fires. Most of the B-D NF is well within the natural range of variability. In fact, dense forest stands may not be caused by fire exclusion, but by a series of consecutive wet years that boosted seedling survival and expanded the local range.* *Drought, wind, and low humidity, not fuels loads, drive large wildfires. Weather and climatic conditions are also the driving force behind expanding insect populations."* **FS Response:** The cited article is opinion commentary criticizing the then proposed Beaverhead-Deerlodge Conservation, Restoration and Stewardship Act of 2007. This bill did not pass into law. We concur dry fuels and weather conditions, along with the amount of dry fuels, all contribute to fire behavior. The amount of fuel is the one part of the wildland fire equation that forest managers can most easily and inexpensively influence. We understand that most forests will burn when an ignition occurs, fuel moistures are low, and weather conditions such as temperature and wind are at extremes. These extreme conditions coupled with an ignition are uncommon on the Helena Ranger District. Much more common are the summer conditions that allow for firefighters to effectively suppress small fires that have the potential to grow large if left alone. We concur wildland fire has some benefits to these resources as well. The use of prescribed burning under controlled conditions is how we will be partially replicating the benefits of wildland fire. Please see responses to #1, #3, #4, #5, and #8.
Laverty, Lyle, USDA Forest Service and Tim Hartzell U.S. Department of the Interior "A Report to the President in Response to the Wildfires of 2000", September 8, 2000.	Opposing View #27: *"The Congressional Research Service (CRS) recently addressed the effect of logging on wildfires in an August 2000 report and found that the current wave of forest fires is not related to a decline in timber harvest on Federal lands. From a quantitative perspective, the CRS study indicates a very weak relationship between*

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	acres logged and the extent and severity of forest fires. To the contrary, in the most recent period (1980 through 1999) the data indicate that fewer acres burned in areas where logging activity was limited." *"Qualitative analysis by CRS supports the same conclusion. The CRS stated: "[T]imber harvesting removes the relatively large diameter wood that can be converted into wood products, but leaves behind the small material, especially twigs and needles. The concentration of these fine fuels on the forest floor increases the rate of spread of wildfires." Similarly, the National Research Council found that logging and clearcutting can cause rapid regeneration of shrubs and trees that can create highly flammable fuel conditions within a few years of cutting."* **FS Response:** The cited paper is a report prepared in response to then President Clinton's request for recommendations on how to best respond to the 2000 wildfires, reduce the impacts of the wildland fires on rural communities, and ensure sufficient firefighting resources in the future. The quotes provided by the commenter were made in response to critics of the President's proposal to protect roadless areas. These critics expressed concern that the roadless policy could increase wildfire risks. On the next page, the report supports thinning stands to reduce small diameter trees, underbrush, and accumulated fuels. It cites a study that demonstrated fuel reduction treatments (which included thinning) were effective in mitigating fire severity. In the Telegraph Vegetation Project, thinning and other harvest activities will be used to modify fire behavior as well as meet other vegetation objectives. The large, fire-resistant trees will be retained and the natural and activity-generated slash will be treated.
Lawrence, Nathaniel, NRDC senior attorney "Gridlock on the National Forests" Testimony before the U.S. House of Representatives Subcommittee on Forests and Forest Health (Committee on Resources) December 4, 2001.	Opposing View #28: *"I will turn first to forest thinning aimed at reducing fire risks. There is surprisingly little scientific information about how thinning actually affects overall fire risk in national forests."* *"How can it be that thinning could increase fire risks? First, thinning lets in sunlight and wind, both of which dry out the forest interior and increase flammability. Second, the most flammable material - brush, limbs, twigs, needles, and saplings - is difficult to remove and often left behind. Third,*

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	opening up forests promotes brushy, flammable undergrowth. Fourth, logging equipment compacts soil so that water runs off instead of filtering in to keep soils moist and trees healthy. Fifth, thinning introduces diseases and pests, wounds the trees left behind, and generally disrupts natural processes, including some that regulate forest health, all the more so if road construction is involved." **FS Response:** The first statement may have been incorrect in 2001, when it was made, and is certainly incorrect now. A number of studies and reports have been made over the years investigating the effect of thinning on fire behavior and effects (refer to the list of some of these studies and reports in the response to #17 above). The EA acknowledges that wind exposure may be increased within timber harvest units and surface fuels could be drier as a result. Thus, fire researchers indicate it is critical that surface fuels be treated to minimize fire intensity (Graham et al. 1999; Agee and Skinner 2005; Graham et al. 2004; Peterson et al. 2005). Slash reduction will be conducted following harvest. The quotation given above also says that *"logging equipment compacts soil so that water runs off instead of filtering in to keep soils moist."* It is true that logging equipment, particularly ground-based equipment) can compact soils, but project design, resource protection measures, and best management practices effectively minimize soil disturbance. The Telegraph Vegetation Project will meet Region 1 soil quality standards. The quotation says that *"thinning introduces diseases and pests, wounds the trees left behind."* The vegetation treatments proposed in the Telegraph Vegetation Project would have the opposite effect on insects and disease. Treatments would leave a more robust stand of residual trees that are more resistant to insects. Careful logging and contract administration keeps the amount of residual tree damage (i.e., wounds) to a minimum.
Leitner, Brian. "Logging Companies are Responsible for the California Wildfires." The Democratic Underground, October 30, 2003.	Opposing View #29: *"Those who would argue that this form of logging has any positive effects on an ecosystem are clearly misinformed. This type of logging has side effects related to wildfires, first and foremost being that the lumber companies aren't interested in hauling out all the smaller trees, branches, leaves, pine needles, sawdust, and other debris generated by cutting all these trees. All this*

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	debris is left on site, quickly dries out, and is far more flammable sitting dead on the ground than it was living in the trees. Smaller, non-commercially viable trees are left behind (dead) as well - creating even more highly flammable fuel on the ground.." **FS Response:** The "form of logging" that the author is referring to is not a component of the Telegraph Vegetation Project. The "smaller trees, branches, leaves, pine needles, sawdust, and other debris generated by cutting all these trees" is specifically treated by either mechanical means or broadcast burning to meet the State of Montana standards for slash treatment. Meeting these standards leaves the treatment areas in a fuels condition where a wildland fire can be effectively suppressed with a minimal amount of resources.
"More Large Forest Fires Linked To Climate Change" Adapted from materials provided by the University of Arizona, Science Daily, July 10, 2006	Opposing View #30: *"Almost seven times more forested federal land burned during the 1987-2003 period than during the prior 17 years. In addition, large fires occurred about four times more often during the latter period."* *"The increases in fire extent and frequency are strongly linked to higher March-through-August temperatures and are most pronounced for mid-elevation forests in the northern Rocky Mountains.* *The new finding points to climate change, not fire suppression policies and forest fuel accumulation, as the primary driver of recent increases in large forest fires."* **FS Response:** The article is a brief summary of a 2006 publication titled "Warming and Earlier Spring Increases Western U.S. Forest Wildfire Activity" written by Westerling et al. In their study, the authors compiled a database of large wildfires in the western United States forests since 1970, and compared it with hydro-climatic and land-surface data. Their study indicates that large wildfire activity increased markedly in the mid-1980s, with higher large-wildfire frequency, longer wildfire durations, which they suggest is strongly associated with increased spring and summer temperatures and an earlier spring snowmelt. The authors do not discount the effect of fuels: *"In some forest types, past land uses [including fire suppression] have probably increased sensitivity of current forest wildfire regimes to climatic variability through effects on the quantity, arrangement, and continuity of fuels."* They further state, *"The overall*

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	importance of climate in wildfire activity underscores the urgency of ecological restoration and fuels management to reduce wildfire hazards to human communities and to mitigate ecological impacts of climate change in forests that have undergone substantial alterations due to past land uses."
Heyerdahl, Emily K., Penelope Morgan, James P. Riser II. 2008. Multi-season Climate Synchronized Historical Fires in Dry forests (1650-1900), Northern Rockies, USA. Ecology, 89(3), 2008, pp. 705–716	Opposing View #31: *"We inferred climate drivers of 20th-century years with regionally synchronous forest fires in the U.S. northern Rockies. We derived annual fire extent from an existing fire atlas that includes 5038 fire polygons recorded from 12070086 ha, or 71% of the forested land in Idaho and Montana west of the Continental Divide. The 11 regional-fire years, those exceeding the 90th percentile in annual fire extent from 1900 to 2003 (>102314 ha or ~1% of the fire atlas recording area), were concentrated early and late in the century (six from 1900 to 1934 and five from 1988 to 2003). During both periods, regional-fire years were ones when warm springs were followed by warm, dry summers and also when the Pacific Decadal Oscillation (PDO) was positive. Spring snowpack was likely reduced during warm springs and when PDO was positive, resulting in longer fire seasons. Regional-fire years did not vary with El Nino-Southern Oscillation (ENSO) or with climate in antecedent years. The long mid-20th century period lacking regional-fire years (1935-1987) had generally cool springs, generally negative PDO, and a lack of extremely dry summers; also, this was a period of active fire suppression. The climate drivers of regionally synchronous fire that we inferred are congruent with those of previous centuries in this region, suggesting a strong influence of spring and summer climate on fire activity throughout the 20th century despite major land-use change and fire suppression efforts. The relatively cool, moist climate during the mid-century gap in regional-fire years likely contributed to the success of fire suppression during that period. In every regional-fire year, fires burned across a range of vegetation types. Given our results and the projections for warmer springs and continued warm, dry summers, forests of the U.S. northern Rockies are likely to experience synchronous, large fires in the future."* **FS Response:** The citation is a research study conducted in Idaho and western Montana to compare fire scars to tree ring reconstructions of climate. The results suggest that regional fire years

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	occurred when spring-summers were significantly warm and summers were significantly warm-dry; years when fire was recorded at only a few of the study sites appear to have occurred under a broad range of climate conditions. It is unclear what the commenter's point was in including this citation as it contains no discussion of land management actions. It has long been established that weather is a principal factor in fire behavior.
Okoand Ilan Kayatsky, Dan. "Fight Fire with Logging?" Mother Jones, August 1, 2002	Opposing View #32: *"Still, forestry experts warned in the 2000 plan that logging should be used carefully and rarely; in fact, the original draft states plainly that the "removal of large merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk."* *"Now, critics charge that the Bush administration is ignoring that warning. Neil Lawrence, a policy analyst with the Natural Resource Defense Council, claims that Washington has taken a far more aggressive approach to incorporating commercial logging in its wildfire prevention plans. Moreover, critics claim the administration's strategy, far from protecting the lives and homes of those most at risk, could actually increase the likelihood of wildfires*" **FS Response:** The cited article is opinion commentary written over 14 years ago about the implementation of the National Fire Plan, which has little relevance to the Telegraph Vegetation Project. Please see responses to #25 to #27 above.
Oregon State University Research Science Centric, July 9, 2009	Opposing View #33: *"Fuel reduction treatments should be forgone if forest ecosystems are to provide maximal amelioration of atmospheric carbon dioxide over the next 100 years,' the study authors wrote in their conclusion. 'If fuel reduction treatments are effective in reducing fire severities in the western hemlock, Douglas-fir forests of the west Cascades and the western hemlock, Sitka spruce forests of the Coast Range, it will come at the cost of long-term carbon storage, even if harvested materials are used as biofuels.' "* **FS Response:** The cited article is a review of a published study titled "Forest Fuel Reduction Alters Fire Severity and Long-term Carbon Storage in Three Pacific Northwest Ecosystems" written by Stephen Mitchel, Mark Harmon and Kari O'Connell. The authors of the study used a forest ecosystem simulation model to examine the effects of fuel

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	reduction on fire severity and the resulting long-term carbon storage among three Pacific Northwest ecosystems: the east Cascades ponderosa pine forests, the west Cascades western hemlock-Douglas-fir forests, and the Coast range western hemlock-Sitka spruce forests. Their results suggest that if fuel reduction treatments are effective in reducing fire severities in the western hemlock-Douglas-fir forest of the west Cascades and western hemlock-Sitka spruce forests of the Coast Range, it will come at the cost of long-term carbon storage even if harvested materials are utilized as biofuels. The conclusions of this paper are not applicable to the Telegraph Vegetation Project as the forest types that were studied in the Pacific Northwest are vastly different from those found in the Northern Rockies and the project area. The responses to fuel reduction treatments and carbon storage cannot be correlated from the study to the treatments in the Selected Alternative.
O'Toole Randal. "Incentives, Not Fuels, Are the Problem" Published by the Thoreau Institute	Opposing View #34: *"While top officials blame recent fires on fuels, all the on-the-ground reports I've read focus on the weather."* **FS Response:** The cited article is opinion commentary that claims that the Forest Service exaggerates wildfire and forest fuels concerns to leverage Congress for a bigger budget. The author also claims the reason for increased fire suppression and fuel reduction costs is due to Congress providing the Forest Service a 'blank check,' which he suggests offers no incentive to control costs. How Congress funds the Forest Service is outside the scope of the Telegraph Vegetation project. In the sentence following the provided quotation, the author writes, *"I am not saying there is no buildup of fuels, just that the buildup isn't as important as the popular story has led us to believe."* It is well established that potential fire behavior (intensity) and severity (effect) are dependent on the interaction between fuel, weather, and physical setting (Graham et al. 2004). Of those three factors, the only thing humans can alter through management is fuel. Please also see response to *#3.*

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O'Toole, Randal. 2002. "Reforming the Fire Service: An Analysis of Federal Fire Budgets and Incentives." The Thoreau Institute.	Opposing View #35: *"This paper will show that built-up fuels are not the main reason, or even a major reason, for recent severe fires or high fire suppression costs. The weather is the prime reason for widespread fires this year as well as in 2000, 1999, and other recent years. But the major reason for increased costs is institutional: The federal land agencies, and especially the Forest Service, have a blank check to put out fires and thus have no reason to control their costs. If fuels are not the problem, then it isn't necessary to spend $400 million a year treating them."* **FS Response:** The cited article is opinion commentary that is a longer version of the article cited in #34 above. Please see response to #34.
O'Toole, Randal. "Money to Burn?" Regulation, Winter 2002 - 2003	Opposing View #36: *"Post-fire reports on individual fires make little or no mention of excess fuels. Instead, fire scientists agree that drought is the cause of the severe fires in recent years. This year's Rodeo- Chedisky Fire, the largest fire in Arizona history, was on heavily managed and thinned federal lands, not an untouched wilderness brimming with excess fuels."* **FS Response:** The cited article is opinion commentary that is essentially the same as what is contained in the articles of #34 and 35 above. Please see response to #34.
Partridge, Arthur Dean Ph.D. Testimony to the Agriculture, Nutrition and Forestry Committee United State Senate. Hearing to Review Healthy Forests Restoration Act, HR 1904 June 26, 2003	Opposing View #37*: "The current focus on 'fuels' is, in itself, misguided because almost anything in a forest will burn, given the right conditions. Any fire specialist will tell you that the principal factors affecting fire are temperature and moisture, not fuels. No legislation will prevent or even reduce fires in the vast areas of the national forests and to pretend so is fraudulent."* **FS Response:** The cited article is testimony submitted in opposition to the Healthy Forests Restoration Act. The Telegraph Vegetation Project is not proposed under this legislation. Please see responses to #1, #3, #4, #5, and #8. The Telegraph Vegetation Project treatments are not intended to prevent or reduce fires, but instead to modify fire behavior to reduce the likelihood of high-severity fires in treated areas through the restoration of forest structure and composition in the lodgepole pine and Douglas-fir forest types.

Author/Date/Title	Response to literature cited in opposing views
Peters, R.L., Frost, E. and Pace, F. 1996. "Managing for forest ecosystem health: A reassessment of the forest health crisis." Defenders of Wildlife. Washington, D.C. 36 p.	Opposing View #38*: "A number of studies have shown that for some ecosystems, the major factor determining fire intensity and size is weather and not the amount of fuel (Baker 1989, Flannigan and Harrington 1988, Haines and Sando 1969, Rothermel 1995). For example, Bessie and Johnson (1995) found that fire spread and intensity were strongly related to weather conditions and only weakly related to fuel loads in the southern Canadian Rockies. Similarly, many hundreds of the thousands of acres of forests that were intensely burned in the 1994 Tyee Fire on the Wenatchee National Forest had very low fuel loads. The Forest Service and Fish and Wildlife Service concluded that weather patterns and terrain -- not fuels -- were the major reasons why this large fire burned the way it did (U.S. Forest Service 1995, U.S. Fish & Wildlife Service 1994). Such case studies provide little evidence that salvage logging of dead and dying trees will significantly reduce wildfires."* **FS Response:** The Forest Service was unable to access the cited reference, thus this response is to the provided quotation. The concepts of the interaction between fuels, weather, and topography have already been addressed in the responses to opposing views #1, #3, #4, #5, #8, #9, #18, #26, and #30.
Peterson, Mike testimony to the Senate Agriculture, Nutrition, and Forestry Committee concerning the Healthy Forests Restoration Act, HR 1904. June 26 2003	Opposing View #39*: "H.R 1904 does not include any specific measures to protect homes or communities. It is also inconsistent with the Western Governors' Association 10-Year Comprehensive Strategy, which does not call for any changes in existing laws. The only proven method to protect homes and communities is to reduce flammable materials in the immediate vicinity of structures, yet the definitions in H.R. 1904 would not require any activities to be near homes. Instead, the bill seeks to further subsidize the timber industry and eliminate obstacles to logging large, fire-resistant trees miles away from the nearest home. The country's top forest scientists, including the Forest Service's own scientists, have found that this kind of logging can actually increase fire risk and make fires larger and more intense."* **FS Response:** The cited testimony is opinion commentary opposing the Healthy Forests Restoration Act as written for various reasons. This article is not relevant to the Telegraph Vegetation

Author/Date/Title	Response to literature cited in opposing views
	Project because the project is not proposed under this legislation. The project is not designed to prevent loss of structures on private land because this project does not propose treatment on privately owned property. Following treatment on NFS lands within the WUI, future wildfires in the project area would be less intense, less resistant to control, and would provide more of a safety margin for firefighters and residents.
Platt, Rutherford V., Thomas T. Veblen, and Rosemary L. Sherriff. Are Wildfire Mitigation and Restoration of Historic Forest Structure Compatible? A Spatial Modeling Assessment. Annals of the Association of American Geographers, 96(3), 2006, pp. 455–470	Opposing View #40*: "We question the validity of thinning as a means both to reduce the threat of wildfire and to restore historic forest structure in the absence of site-specific data collection on past and present landscape conditions."* **FS Response:** The paper discusses the historical role of fire in the ponderosa pine ecosystems of the Colorado front. The authors describe the fire regime as "mixed," a designation that includes stand-replacing fire. They conclude that not all ponderosa pine forests should be returned to a "nonlethal" state if the goal is to create historical conditions. This, therefore, was the basis for the conclusion in paragraph 2. Contrary to the conclusions made regarding Boulder County, Colorado, the fire regimes and vegetation/fuel conditions in northwest Montana that are in need of restoration to historical forest structures are not limited to the lower elevations or away from the national forests. Analysis for the Telegraph Vegetation Project included collecting site-specific data on both past and present landscape conditions. Past and current data collection was used to help design the proposed vegetation and fuels treatments.
Power, Thomas Ph.D. 'The Politics of Forest Fires -- The Abuse of Other People's Hard Times." unpublished. 8/15/2000	Opposing View #41*: "While most of us have suffered with the unavoidable fire-related anxieties, we have also been impressed by the hard work and heroism of both neighbors and anonymous firefighters. But others have tried to profit from the fires and the primordial fears they evoke. The forest products industry has been in the lead in this exploitation of other people's hardtimes.* *The forest products industry wants access as cheaply as it can get it to as much wood fiber as possible. It once had privileged access to forested public lands. As the frontier economy has faded*

Author/Date/Title	Response to literature cited in opposing views
	and government give-aways have fallen out of political favor, the forest products industry's privileged grip on public resources has begun to slip. The current forest fires offer them an opportunity to try to regain some of their lost clout. *The fires, timber industry spokespersons claim, are the result of restrictions on commercial logging on public lands. If all of these lands had been logged, they assert, the fires would not be burning. It is the federal government and the environmentalists they are in cahoots with who have caused the fires that now threaten us. As one timber industry advocate baldly said, "I never saw a clearcut burn."* *Nothing could be further from the truth. Of course clearcuts burn. When long, hot summers dry out the grasses, brush, and logging wastes, they can flare explosively. When they grow thick with closely packed young trees, they present exactly the fire danger we are wrestling with now. The logging roads provide human access that is the source of the vast majority of forest fires.* *If roading and logging eliminated the threat of wildfire, most of the fires that threaten us now would not be burning. Look at where these fires are: They are largely burning on the forest-urban interface in areas adjacent to intense human activity. In Western Montana, for instance, the fires are in are burning in the forests adjacent to some of the rapidly growing residential areas in the nation, the Bitterroot, Helena, and Clark Fork Valleys. These are not roadless areas that have never been logged. Quite the contrary, they are areas that were roaded and logged in the past. Those roads often have then provided access for the human activity that now dominates these areas, including the home building, residential settlement of the last two decades, and recreational activity. The trees now burning are usually second growth that followed past logging."* **FS Response:** The cited article is 16-year-old opinion commentary. The objective of the Telegraph Vegetation Project treatments is not to eliminate the threat of wildfire. Treatments are intended to restore forest structure and composition in the lodgepole pine and Douglas-fir forest types to improve forest stand resilience.
Roberson, Emily B. Ph.D., Senior Policy Analyst, California Native Plant Society. August 12, 2002 letter to Chief Dale Bosworth.	Opposing View #42*: "It is well established that logging and roadbuilding often increase both fuel loading and fire risk. For example, the Sierra Nevada Ecosystem Project (SNEP) Science Team*

Author/Date/Title	Response to literature cited in opposing views
	(1996) concluded that "timber harvest…. has increased fire severity more than any other recent human activity" in the Sierra Nevada. Timber harvest may increase fire hazard by drying of microclimate associated with canopy opening and with roads, by increases in fuel loading by generation of activity fuels, by increases in ignition sources associated with machinery and roads, by changes in species composition due to opening of stands, by the spread of highly flammable non-native weeds, insects and disease, and by decreases in forest health associated with damage to soil and residual trees (DellaSala and Frost, 2001; Graham et al., 2001; Weatherspoon et al., 1992; SNEP Science Team, 1996). Indeed a recent literature review reported that some studies have found a positive correlation between the occurrence of past logging and present fire hazard in some forest types in the Interior Columbia Basin (DellaSala and Frost, 2001)." **FS Response:** Concerns identified in the quotation will be mitigated through project design and resource protection measures. Natural and project-generated slash will be treated following harvest activities to mitigate fire hazard. The cited letter also says, "*Like most in the scientific and conservation community, California Native Plant Society is neither in favor of or opposed to logging per se. Instead we advocate forest, fire and fuels management practices that minimize danger to lives and property; create and maintain sustainable, productive forest ecosystems dominated by viable plant species; conserve rare and imperiled species through their natural ranges; and protect water quality and supply, soils and other forest ecosystem services and resources."* The Telegraph Vegetation Project will maintain sustainable productive forest ecosystems, conserve rare plants, and protect water quality and supply, soils, and other forest resources.
Schoennagel, Tania, Thomas T. Veblen, and William H. Rommie. 2004. The Interaction of Fire, Fuels, and Climate across Rocky Mountain Forests. BioScience. July 2004, Vol. 54 No. 7 pp 661-676.	Opposing View #43*: "No evidence suggests that spruce–fir or lodgepole pine forests have experienced substantial shifts in stand structure over recent decades as a result of fire suppression. Overall, variation in climate rather than in fuels appears to exert the largest influence on the size, timing, and severity of fires in subalpine forests (Romme and Despain 1989, Bessie and Johnson 1995, Nash and Johnson 1996, Rollins et al. 2002). We conclude that large, infrequent stand replacing*

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	fires are "business as usual" in this forest type, not an artifact of fire suppression." (Pg. 666) *"Variation in daily area burned was highly correlated with the moisture content of 100-hour (2.5- to 7.6- cm diameter) and 1000-hour dead fuels (Turner et al. 1994). Once fuels reached critical moisture levels later in the season, the spatial pattern of the large, severe standreplacing fires was controlled by weather (wind direction and velocity), not by fuels, stand age, or firefighting activities (Minshall et al. 1989, Wakimoto 1989, Turner et al. 1994)." (Pg. 666)* **FS Response:** The cited article is a case study of large wildfires in the Rocky Mountains to assess the potential effectiveness of fuel reduction treatments across a range of major forest types. The authors discuss the differences between high, mixed, and low severity fire regimes and the different forest types characteristic of each one. They conclude that fire regimes, climate, fuel type and abundance, and stand structure vary significantly across the Rocky Mountain region, and thus, suggest that a "one-size-fits-all" approach to reducing wildfire hazards in the Rocky Mountain region is unlikely to be effective. They also state*: "in many places, there is an urgent need and a solid ecological basis for restoration and fire-mitigation efforts."* The quotations provided by the commenter refer to subalpine forests characterized by high-severity fire regimes. The predominant fire regimes in the project area are low, mixed and high severity with fire return intervals of 35 to 200 years. Within mixed-severity fire regimes, the authors conclude, *"fuel reduction treatments (mechanical thinning and prescribed burning) may effectively reduce fire severity under moderate weather conditions, but these treatments may not effectively mitigate fire behavior under extreme weather conditions."* Within high severity fire regimes, the authors conclude*, "fuel reduction projects probably will not substantially reduce the frequency, size, or severity of wildfires under extreme weather conditions."* The fuel modeling conducted for the Telegraph Vegetation Project suggests that treatments will be effective at modifying fire behavior to reduce the potential for high-severity fire within treated areas under the much more frequent average temperature and precipitation weather conditions usually experienced in a western Montana summer.

Author/Date/Title	Response to literature cited in opposing views
Strickler, Karyn and Timothy G. Hermach, "Liar, Liar, Forests on Fire: Why Forest Management Exacerbates Loss of Lives and Property" Published by CommonDreams.org, October 31, 2003	Opposing View #44*: "Fire, just like insects and disease, are a natural and beneficial part of forest ecosystems and watersheds. Without these natural processes the forest ecosystems quickly degrade. Excessive logging removes and reduces cooling shade adding to the hotter, drier forests along with logging debris creating a more flammable forest. Current "forest management" practices, road building and development cause forest fires to rage for hundreds of miles."* **FS Response:** The cited article is opinion commentary written nearly 13 years ago criticizing the Healthy Forest Restoration Act. The Telegraph Vegetation Project is not being proposed under the authority of the Healthy Forests Restoration Act (H.R. 1904). Please see responses to #4, #10, #16, #25, #26, #31, #32, #36, and #48.
Taxpayers for Common Sense. "From the Ashes: Reducing the Harmful Effects and Rising Costs of Western Wildfires. Washington DC, Dec. 2000.	Opposing View #45*: "Commercial logging and logging roads open the forest canopy, which can have two effects. First, it allows direct sunlight to reach the forest floor, leading to increased evaporation and drier forests.[5] As a consequence, ground fuels (grass, leaves, needles, twigs, etc.) dry out more quickly and become susceptible to fire. Second, an open canopy allows more sunlight to reach the understory trees, increasing their growth.[6] This can lead to weaker, more densely-packed forests." (pgs. 19-20)* *"Congress and the Forest Service continue to rely on the commercial logging program to do something it will never accomplish – reduce fire risk. The commercial logging program is designed to provide trees to private timber companies, not to reduce the risk of fire." (pg. 20)* **FS Response:** This paper made sweeping generalized statements about management of the national forests as a whole. The EIS performed site-specific analysis of a small watershed in Montana and made informed decisions regarding appropriate management actions. Many of the recommendations in the paper are for national policy changes that are not relevant to project planning at the Ranger District level. The EIS recognizes that timber harvesting may result in increased short-term fire risks, but planned whole-tree yarding, mechanical pile and burning, and broadcast burning would effectively limit logging slash, reducing the intensity of follow-

Author/Date/Title	Response to literature cited in opposing views
	up burns and natural fires. Even though the rate of fire spread may increase in treated stands (due to drying of fast-burning fuels), fire intensity and fire severity would be reduced. The risk of large fires would be reduced.
Thomas, Craig. "Living with risk: Homeowners face the responsibility and challenge of developing defenses against wildfires." Sacramento Bee newspaper, July 1, 2007.	Opposing View #46*: "Indiscriminate logging is not a viable solution to reducing wildfire risk. Logging can actually increase fire danger by leaving flammable debris on the forest floor. Loss of tree canopy lets the sun in, encouraging the growth of brush, increases wind speed and air temperature, and decreases the humidity in the forest, making fire conditions even worse."* **FS Response:** The cited article is opinion commentary written in the aftermath of the 2007 Angora fire that destroyed numerous homes near Lake Tahoe, California. The author suggests that a good fuels management plan focuses on reducing the fuels that ignite and spread wildfire while keeping the large, older trees that are resistant to fire. He cautions against a one-size-fits-all fuels reduction prescription. The definition of "indiscriminate" is "haphazard; random; confused; not properly restrained." There is nothing indiscriminate about the vegetation and fuels management activities in the Telegraph Vegetation Project. Site-specific assessments were completed to determine appropriate treatments to achieve desired conditions. The EIS recognizes that timber harvest may temporarily increase fire hazard, but planned whole-tree yarding, mechanical pile and burning, and broadcast burning would effectively limit logging slash, reducing the intensity of follow-up burns and natural fires. Modeling suggests that following all treatments fire intensity will be reduced under normal summer conditions.
University of California; SNEP Science Team and Special Consultants 1996 "Sierra Nevada Ecosystem Project: Final Report to Congress" Volume 1, Chapter 4 – Fire and Fuels.	Opposing View #47*: "Timber harvest, through its effects on forest structure, local microclimate, and fuels accumulation, has increased fire severity more than any other recent human activity."(pg.62)* **FS Response:** The quote is from the 1996 "Sierra Nevada Ecosystem Project: Final Report to Congress" Chapter 4 (Fire and Fuels) in a list of "Critical Findings." The comment was made by the authors specifically in context of the Sierra Nevada Mountain Range. They discuss the finding in the

Author/Date/Title	Response to literature cited in opposing views
	body of the chapter on page 64, describing the historic timber harvests as: *"The rapid influx of settlers into California following the discovery of gold, however, initiated more profound changes in the role of fire in Sierra Nevada ecosystems. Logging was undertaken initially to supply the mines and later to support the growing population of the new state. Timber volumes harvested in the Sierra Nevada continued to increase into the twentieth century, reaching a peak in the 1970s and 1980s. Typically, loggers harvested fire-resistant species and large trees, and these were replaced by greater numbers of much more fire-susceptible smaller trees. This pattern of biomass removal contrasted markedly with that of presettlement surface fires, which tended to kill (and later consume) small trees and leave many large trees to survive. Large quantities of debris left after logging led to severe fires, establishing vegetation patterns still evident today. A new pattern of ignitions, characterized in part by careless and indiscriminate burning, was introduced by miners, sheepherders, settlers, and loggers."* The historic logging practices described above, and their effects, bear little relationship to the vegetation and fuels treatments that would be followed by fuels reduction activities for the Telegraph Vegetation Project. Additionally, the fire regimes in California described in this article are substantially different from those found in the Telegraph Creek drainage. As a result, this opposing view has no relevance to the Telegraph Vegetation Project.
USDA Forest Service Bald Angel Vegetation Management Project Environmental Assessment. La Grande Ranger District, Wallowa-Whitman National Forest December 2006	Opposing View #48*: "Why is the natural fire regime in most Rocky Mountain ponderosa pine–Douglas fir forests variable in severity? Extended droughts and high winds can lead to exceptional fire spread across a broad spectrum of fuel loads and forest structures. For example, almost 25,000 ha of ponderosa pine– Douglas fir forest burned on a single day (9 June 2002), driven by strong winds (Finney et al., 2003). Yet, brief episodes when the winds declined and fuel moisture rose, led to low-severity fire in the same landscape (Finney et al., 2003), suggesting that extreme weather, not fuels, was the chief cause of high-severity fire under those conditions. Even during summer, ponderosa pine–Douglas fir landscapes in the Rocky Mountains are subject to rapid increases in wind speed and*

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	changes in direction from jet streams or cold fronts (Baker, 2003)." (pg. 5) **FS Response:** The provided quotation is from the 2006 publication, "Fire, Fuels and Restoration of Ponderosa pine and Douglas-fir Forests in the Rocky Mountains, USA" written by William Baker, Thomas Veblen, and Rosemary Sherriff. This article was included in the Bald Angel EA cited above. The authors suggest that fires in ponderosa pine-Douglas-fir forests in the Rocky Mountains historically varied in severity and that fire exclusion has not clearly and uniformly increased fuels or shifted fire types from low to high severity. We acknowledge that, historically, the warm dry forest types in the Rocky Mountains burned at varied severities with some areas of under burning and other areas resulting in moderate to high tree mortality. However, this paper is not relevant to the Telegraph Vegetation Project as the dry ponderosa pine and Douglas-fir forest types studied in the research paper are not found in the project area. In response to the provided quotation above, please see responses to #5 and #43.
Voss, René "Getting Burned by Logging," July 2002 The Baltimore Chronicle	Opposing View #49*: "Ironically, this very type of logging, experts inform us, is likely to increase, not decrease, the frequency and severity of wildland fires.* *In the Forest Service's own National Fire Plan, agency scientists warned against the use of commercial logging to address fire management. The report found that 'the removal of large, merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk.' "* **FS Response:** The cited article is opinion commentary written over 14 years ago in support of the National Forest Protection and Restoration Act, which would eliminate commercial logging on Federal public lands. This bill did not pass into law. Large, mature trees will be retained in the silviculture prescriptions. All stands that meet accepted old growth definitions will be reserved. Natural and activity generated slash will be treated.
Walsh, Jeremy. "Scientist: Money to fight beetles as fire mitigation not productive." Durango Herald, April 23, 2010.	Opposing View #50: *"The federal assistance could include funding to help state and local governments mitigate the beetle infestations, the presence of which increases the risk of forest wildfires that*

Author/Date/Title	Response to literature cited in opposing views
	endanger surrounding communities and infrastructure, said supporters of the bill." *"Kulakowski, a former research scientist at the University of Colorado at Boulder and current professor at Clark University in Massachusetts, discounted this notion during his testimony. He said climate, not insects, plays the most important role in forest fires, as wildfires are more likely to occur during droughts."* **FS Response:** The Forest Service could not access this article, thus this response is only to the quotation provided. The concepts of the interaction between fuels and weather have already been addressed in the responses to opposing views #1, #3, #4, #5, #8, #9, #18, #26, and #30.
Westerling, Anthony Ph.D., "Does Global Warming Increase Forest Fires?" NPR, Talk of the Nation, July 7, 2006	Opposing View #51: *"New research published this week in the journal Science says that global warming may be causing more intense wildfires in the western United States. The researchers found that increases in large wildfire activity in the western United States over the past 25 years is 'strongly associated with increased spring and summer temperatures and an earlier spring snowmelt.' "* **FS Response:** This is applicable, but at such a large scale as to be of limited value in project-specific planning such as the Telegraph Vegetation Project. The analysis of resource effects in the EIS (Chapter 3) includes discussion of the effects of global warming predictions. The effects that the project could have on global climate change are put in to context in project file.
Wuerthner, George "The Climate Factor - Forest thinning won't deter the coming large fires" Eugene Weekly, December 6, 2007	Opposing View #52: *"Indeed, climatic conditions drive all big fires — not fuels. All substantial fires occur only if there is extended drought, low humidity, high temperatures and, most importantly, high winds. Wind, in particular, is critical. Wind increases fire spread exponentially.* *When conditions are "ripe" for a large blaze, fires will burn through all kinds of fuel loads. By contrast if the forest is wet like Oregon's coastal forests, you can have all the fuel in the world and it won't burn.* *For this reason, most fires go out without burning more than a few acres. By contrast, when you have drought, low humidity, high temperatures and wind, a few blazes will grow into huge fires. For this*

Author/Date/Title	Response to literature cited in opposing views
	reason, approximately 1 percent of all fires are responsible for about 95 to 99 percent of the acreage burned." **FS Response:** The cited article is unsupported opinion commentary and the subject matter has been responded to in many previous opposing views. Please see responses to #1, #3, #4, #5, and #8.
Wuerthner, George. "Logging, thinning would not curtail wildfires" The Eugene Register-Guard, December 26, 2008	Opposing View #53: *"Another surprising finding is that mechanical fuels treatment, commonly known as logging and thinning, typically has little effect on the spread of wildfires. In fact, in some cases, it can increase wildfires' spread and severity by increasing the fine fuels on the ground (slash) and by opening the forest to greater wind and solar penetration, drying fuels faster than in unlogged forests."* **FS Response:** The citation is opinion commentary that was written in response to another guest viewpoint printed in an Oregon newspaper. Ample evidence suggests that thinning followed by treatment of the surface fuels can be used to modify fire intensity and severity (please see response to #17 above). The Telegraph Vegetation EIS recognizes that timber harvest may temporarily increase fire hazard in some cases, but yarding tops during harvest operations and prescribed burning following harvest will reduce surface fuels. Modeling described in the Fire and Fuels section of the EIS suggests that following all treatments, fire intensity and severity will be reduced under normal summer conditions over the pre-treatment condition.
Wuerthner, George "Forest Service misses education opportunity" Published in NewWest, June 2010	Opposing View #54: *"For example, the Forest Service justifies the Elliston Face timber sale on the basis of reducing what they call "hazardous" fuels (which as an ecologist I call woody biomass). To quote the FS, "This project would reduce wildland fire risk and help protect lives, communities, and ecosystems from the potential consequences of a high-intensity wildland fire within treatment areas."* *"The Forest Service makes these assertions even though the statement is full of falsehoods, misleading and/or unproven assumptions."* *"even the Forest Service's own analysis concludes that logging of the Elliston Face will have some adverse impacts on soils, watersheds, wildlife, scenery and recreation. So we need to ask whether*

Author/Date/Title	Response to literature cited in opposing views
	the potential effects of a fire that may not occur for a century or more is worth the negative impacts created by the logging process now?" *"The Forest Service's own analysis has six indicator species— including pileated woodpecker, hairy woodpecker, martin, northern goshawk. These species depend on dead snags and down wood that pine beetles and wildfire create. But the FS treats beetles and wildfire as unwelcome events."* *"the FS exploits the fears of misinformed citizens. One can only conclude the agency is still the handmaiden to the timber industry rather than a public servant working on behalf of all citizens of the country."* **FS Response:** The cited article is unsupported opinion commentary criticizing a fuels reduction project on the Helena National Forest. The article is irrelevant to the Telegraph Vegetation Project because the opposing view is based on a project that did not happen. The Telegraph Vegetation Project was designed using the best available science.
Wuerthner, George "Pine Beetle Fears Misplaced" Helena Independent Record, March 25, 2010	Opposing View #55: *"Ultimately, fuels do not control fires. If the climate/weather isn't conducive for fire spread, it doesn't much matter how much dead wood you have piled up, you won't get a large fire. As an extreme example, think of all the dead wood lying around on the ground in old-growth West Coast rainforests — tons of fuel, but few fires — because it's too wet to burn.* *Large blazes are driven by a combination of extreme drought, low humidity, high temperatures and, most importantly, wind. These conditions do not occur in the same place at the same time very frequently — which is why there are often decades to centuries between major blazes and most fires go out without burning more than a few acres."* **FS Response:** The cited article is unsupported opinion commentary stating that bark beetle-induced tree mortality creates new ecological opportunities, increases biodiversity, improves ecosystem health, and reduces fire risk. In response to the quotation provided, please also see responses to #5 and #43.
Wuerthner, George, "WHY THINNING FORESTS IS POOR WILDFIRE	Opposing View #56*: "In the last analysis, the politics of forest thinning promotes more logging. The timber industry has successfully sold the idea*

Author/Date/Title	Response to literature cited in opposing views
STRATEGY" Published in the *Wildlife News*, January 27, 2014	*that fuel reductions work and it has great influence with politicians who buy into to its assurance that logging reduces large fires."* *"So is there any place for forest thinning/fuel reductions? There is. But it should be limited to the areas immediately surrounding homes and communities. Since one can't predict where a fire will start and burn, thinning forest willy-nilly is a waste of effort. Not only are most thinning projects done improperly, most are done for the wrong reasons and lose taxpayer money to boot."* *"Thinning trees/shrubs near homes, combined with a reduction in home flammability by installation of metal roofs, removal of flammable materials adjacent to homes, and other measures can virtually guarantee a home will survive even a severe high intensity forest fire."* **FS Response:** The cited article is unsupported opinion commentary that claim thinning projects are done improperly and willy-nilly. Treatments proposed for the Telegraph Vegetation Project are based on best available science. Please see response #17.
Egan, Timothy, "Fires Not Caused by Reduced Logging, Congressional Report Finds" Published in the *New York Times*: September 1, 2000	Opposing View #57: *"If anything, heavy logging from earlier years may have contributed more to the conditions that have made Western forests ripe for big fires, because more flammable small trees and heavy brush are often left in the forest after the larger stands of timber have been taken out, said the report, by the Congressional Research Service, which analyzes policy for Congress."* **FS Response:** This cited article again points out that logging increases fire behavior. This has been addressed several times. Please see response #53.
Hanson, Chad, "The Big Lie: Logging and Forest Fires" Published in the *Earth Island Journal*, Spring 2000	Opposing View #58 *: "The fact is, commercial logging doesn't prevent catastrophic fires; it causes them. In the latter part of the 19th century, this was common knowledge. Relentless clearing of forests in the Great Lakes region left huge areas largely devoid of the cooling shade of trees, replacing moist natural forest microclimates with the hotter, drier conditions characterized by stump fields. Flammable logging "slash debris" covered the landscape."* *"Not long ago, Congress commissioned a study of California's forests that came to be known as the Sierra Nevada Ecosystem Project (SNEP) report. Produced jointly with the US Forest Service in*

Author/Date/Title	Response to literature cited in opposing views
	1996, the report confirmed what people have known for over a century: "timber harvest, through its effects on forest structure, local microclimate, and fuel accumulation, has increased fire severity more than any other recent human activity" **FS Response:** This cited article is unsupported opinion commentary that once again talks to logging increasing fire behavior. Please see response #53.
"Logging can 'greatly increase' fire severity for 50 years, researchers say" Broadcast on ABC News Australia, August 3, 2014	Opposing View #59 - *"Researchers from the Australian National University (ANU) and Melbourne University examined hundreds of thousands of trees burnt in the 2009 bushfires in Victoria, which claimed the lives of 173 people on a day of extreme temperatures and high winds.* *They found that the increased fire risk began about seven years after an area had been logged and lasted for another 50 years.* *Professor David Lindenmayer, from the ANU, said the results showed the fires around Kinglake and Marysville were about 25 per cent more severe due to the clear-felling of forest in the area."* **FS Response:** This is a study that was done in Australia. The fuel models and habitat types do not represent anything that is found within the Telegraph Vegetation Project boundary, and therefore, is not relevant to this project. Citations that support fuels reduction activities can be found in response #17.
Campbell, James, "Study finds logging increased intensity of Black Saturday fires" Published in the *Herald Sun*, August 03, 2014	Opposing View #60 : *"The scientists say the study showed* *conclusively that logging in the decades prior to Black Saturday made the deadly blaze much more extreme.* *They also warn that increased fire danger in forests lasts for up to 70 years after an area is logged, with the risk peaking between 10 and 50 years."* **FS Response:** This is the same study as above. See response #60.
Sonner, Scott AP, Study challenges views about Western forest fires Published in the *Daily World*, July 23, 2012	Opposing View #61: *"More highly intense fire is not occurring now than historically in dry forests," said William Baker, who teaches fire ecology and landscape ecology in Laramie, Wyo., where he's been doing research more than 20 years. "These forests were much more diverse and experienced a much wider mixture of fire than we thought in the*

Author/Date/Title	Response to literature cited in opposing views
	past, including substantial amounts of high-severity fire." *"If he's right, he and others say it means fuel-reduction programs aimed at removing trees and shrubs in the name of easing fire threats are creating artificial conditions that likely make dry forests less resilient."* *"It means we need to rethink our management of Western dry forests," said Baker, a member of a U.S. Fish and Wildlife Service working group that is developing plans to help bolster northern spotted owl populations in dry forests."* *"Jennifer Marlon, a Yale University paleoecologist, said a study she recently led on the impact of climate change on forests over thousands of years appeared to be largely consistent "with Baker's idea that there were large, severe fires even in dry forests historically." "* *"The general trend from high fire in the 1800s to very low fire in the 1900s is strong and clear from three independent datasets," she said. "Open park-like conditions may have indeed occurred after the 'peak' in burning during the mid-1800s."* *"The new studies provide the first "real, direct data"' showing that more forests burned historically, creating more post-fire forest habitat, said Chad Hanson, a forest ecologist and director of the John Muir Project who is helping lead the listing effort and suing the Forest Service to block post-fire logging in woodpecker habitat near Lake Tahoe."* *"Now, he believes thinning and post-fire salvage operations should be re-examined and emphasis placed on maintaining high-density stands in certain circumstances that would not threaten people or homes."* *"We shouldn't be managing just for low-density forests,'' he said. "We should not be unhappy with - or perhaps even manage for - higher severity fires in the forests."* **FS Response:** This article was reviewed in relation to the Telegraph Vegetation Project. The cited article challenges the work of authors and contemporary forest management. The article relies on survey data across the Nation that suggest forests in the mid-1800s were much denser than previously believed. It further asserts that contemporary fuel-reduction programs aimed at removing trees and shrubs to ease the threat of fire

Author/Date/Title	Response to literature cited in opposing views
	are creating artificial conditions than what was present in the mid-1800s. What isn't mentioned in this article are forest conditions affected by the mountain pine beetle, which represent the majority of the Telegraph project area. Therefore, this article is not relevant to biophysical settings represented in the project area.

Telegraph Vegetation Project
Review of References Cited in Comments to the Environmental Impact Statement

Attachment #4
Dick Artley
"Roads Damage the Proper Ecological Functioning of the Natural Resources in a Forest"

Author/Date/Title	Letter 8, Attachment #4 Response to literature cited in opposing views
Al-jabber, Jabber M. 2003. Habitat Fragmentation: Effects and Implications. Unpublished paper.	Opposing view #1: *"Fragmentation has been considered as one of the most major factors that lead to the decline of many wildlife species (Brittingham and Temple 1983, Yahner 1988, Winslow et al. 2000) because fragmentation tends to decrease population productivity (Robinson et al. 1995). Therefore, Meffe states that "fragmentation has become a major subject of research and debate in conservation biology" (Meffe et al. 1997, p. 272). Forest fragmentation usually occurs when large and continuous forests are divided into smaller patches as a result of road establishment, clearing for agriculture, and human development (Robinson et al. 1995, Meffe et al. 1997)." (Pg. 1)* *"Generally, habitat fragmentation is an ecological process in which a large patch of habitat is divided into smaller patches of habitats. Usually, this process is caused by human activities (roads, agriculture, and logging). It also reduces the value of the landscape as habitat for many species (plants and animals). Fragmentation alters natural habitat in many ways, including reduction of patches' sizes, increment of distances between similar patches, and increment of edges and predation (Brittingham and Temple 1983, Robinson et al. 1995)." (Pp. 2 and 3)* **FS Response:** The cited reference is primarily a general overview of fragmentation as it pertains to wildlife habitat. Fire history studies on the Helena National Forest indicate that the forest experienced fires ranging from frequent, low-severity under burns to large stand-replacing fires (see the Fire and Fuels section of Chapter 3). These fires produced a variety of habitats and naturally fragmented the forest cover. Proposed timber harvests within the Telegraph Creek watershed will not alter the landscape outside the range of conditions that would likely occur naturally over time in this area. The wildlife effects analysis adequately addresses the issue of fragmentation by assessing habitat connectivity impacts. The EIS demonstrates habitat connectivity will be maintained.
Amaranthus, M. P., Rice, R. M., Barr, N. R., & Ziemer, R. R. 1985. Logging and forest roads related to increased debris slides in southwestern Oregon. *Journal of Forestry*, *83*(4), 229-233.	Opposing view #2: *"Debris slides over a 20-year period were inventoried on 137,500 acres of forested land in the Klamath Mountains of southwest Oregon. Frequency during the study period was about one slide every 4.3 years on each 1,000 acres-an erosion rate of about 1/2 yd^3 per acre per year. Erosion rates on roads and landings were 100 times those on undisturbed areas, while erosion on harvested areas was seven times that of undisturbed areas. Three-quarters of the slides were found on slopes steeper than 70 percent and half were on the lower third of slopes."* *"Soil erosion rates due to debris slides were many times higher on forests with roads, landings, and logging activity than on undisturbed forests."*

Author/Date/Title	Letter 8, Attachment #4 Response to literature cited in opposing views
	FS Response: The findings presented in view #2 were developed from analysis of aerial photographs taken between 1956 and 1976. The study area was the coastal mountains of southwestern Oregon, with annual precipitation ranging from over 50 to 150 inches. In contrast, the Telegraph project area receives less than 25 inches of annual precipitation. The concluding sentence from the referenced abstract reads as follows: *"Results serve as a guide to appraising slide risk associated with planned timber harvests or road construction on forested slopes."* The study area geomorphology and climate are completely different from that of the Telegraph project area. The EIS acknowledges the effects of roads on erosion (sedimentation). These effects are disclosed in the EIS in the Hydrology, Fisheries, and Soils sections.
Aber, J., Christensen N., Fernandez I. et al. 2000. Applying ecological principles to management of the U.S. National Forests. Issues Ecology. No **6**, 1–10.	Opposing view #3: *"Roads may have unavoidable effects on streams, no matter how well they are located, designed or maintained. The sediment contribution to streams from roads is often much greater than that from all other land management activities combined, including log skidding and yarding.' (Gibbons and Salo 1973). Research by Megahan and Kidd in 1972 found that roads built in areas with highly erosive soils can contribute up to 220 times as much sediment to streams as intact forests."* **FS Response:** The citation is a position paper that references a number of studies to support its' position regarding active management on National Forest System lands. The Telegraph EIS Hydrology, Fisheries, and Soils sections analyze and acknowledge the impacts of the existing road condition and the selected road construction to sediment delivery to adjacent streams (see Chapter 3 of the EIS). The Hydrology section describes the potential tons of sediment delivered to streams by disturbance type and concludes these amounts are all within acceptable levels.
Borga, M., Tonelli, F., Fontana, G. Dalla, and Cazorzi, F. 2003. Evaluating the effects of forest roads on shallow landsliding. Geophysical Research Abstracts. Vol. 5, 13312.	Opposing view #4: *"Plot-level studies have demonstrated the ability of forest roads to intercept and route both subsurface and surface overland flow more efficiently to the stream network. Significant amount of subsurface throughflow can be intercepted by the road, as a function of the road cut depth and the current saturation deficit, and then redirected, concentrating the flow in particular areas below the road. Road drainage concentration increases the effective length of the channel network and strongly influences the distribution of erosional processes. The concept of wetness index has been used in the study as a surrogate for subsurface throughflow, and the effect of forest roads on subsurface throughflow rerouting has been assessed by evaluating the changes in terms of draining upslope areas. A threshold model for shallow slope instability has been used to analyse erosional impacts of drainage modifications. In the model, the occurrence of shallow landsliding is evaluated in terms of drainage areas, ground slope and soil properties (i.e., hydraulic conductivity, bulk density, and friction angle). The model has been used to generate hypotheses about the broader geomorphic effect of roads. Modeling results have been compared with available field data collected in north-eastern Italy."*

Author/Date/Title	Letter 8, Attachment #4 Response to literature cited in opposing views
	FS Response: This study is very difficult to apply to northwestern Montana, as there is very little relevance of this reference to the proposed project area. The landscape, climate, soils, and geology of Italy are so different that almost no correlation could be reached.
Brister, Daniel. A Review and Comment on: Forest Service Roads: A Synthesis of Scientific Information, 2nd Draft, USDA Forest Service. "December 1998. Retrieved from WildlandsCPR.com	Opposing view #5: *"Many of the conclusions and assumptions contained in the Roads Report are based on analysis of the positive contributions of roads. Negative socio-economic effects of roads have been, in large part, glossed over. The general view expressed in the Roads Report is that overall, roads make a positive socio-economic contribution."* *"The Socio-Economic Effects section has been constructed to overwhelmingly support the contention that the benefits of roads outweigh the costs. In order to arrive at such a conclusion, however, certain important economic costs and concepts have been omitted."* *"A serious problem with the Roads Report is its lack of discussion concerning the economic costs arising from the negative ecological effects of roads. Despite overwhelming scientific data linking roads and sedimentation (Bennett 1991; Grayson et al. 1993; Lyon 1984; Megahan 1980; McCashion and Rice 1983; Wade 1998; Williams 1998), the socio-economic costs of mitigating the effects of this sedimentation receive no mention in the Roads Report. Such costs are central to and should be included in any socio-economic assessment of forest roads."* **FS Response:** The cited paper is commentary on a national report on scientific information regarding the state of national forest roads. The opposing views are beyond the scope of the Telegraph Vegetation Project, as they are general in nature and contain no specific information related to the Telegraph Vegetation Project; nor does the commenter demonstrate a specific connection to this project. Negative effects from road construction activities are not anticipated, primarily due to the location and design of the roads and the use of appropriate erosion control measures, including well-established best management practices. Opposing view #7*: "The present road system constitutes a legacy of current and potential sources of damage to aquatic and riparian habitats, mostly through sedimentation, and to terrestrial habitats through fragmentation and increased access" (Amaranthus et all 1985)."* *"The failure of the Report to properly address mitigation costs associated with the ecological effects is a serious problem that needs to be addressed in future drafts. Similarly, passive-use values need to be taken seriously and considered throughout the Roads Report. In order to rectify these problems, most of the Socio-Economic Effects subsections will have to be reworked. Failing to do so, the Roads Report will paint an incomplete picture of the costs and benefits associated with the Forest Service's road program."* **FS Response:** This opposing view is of the same nature and scope as previous opposing views found above. Please also see the response to opposing views #3 and #5.

Author/Date/Title	Letter 8, Attachment #4 Response to literature cited in opposing views
Bunnell, Fred L. Ph.D., Kelly A. Squires and Isabelle Houde. 2004. Evaluating effects of large-scale salvage logging for mountain pine beetle on terrestrial and aquatic vertebrates. Mountain Pine Beetle Initiative Working Paper 1. Canadian Forest Service.	Opposing view #8*: "Sediment input to freshwater is due to either the slower, large-scale process of soil erosion, or to rapid, localized "mass movements," such as landslides. Forest practices can increase the rate at which both processes occur. Most sediment from forestry arises from landslides from roads and clearcuts on steep slopes, stream bank collapse after riparian harvesting, and soil erosion from logging roads and harvested areas. Roads, particularly those that are active for long periods of time, are likely the largest contributor of forestry-induced sediment (Furniss et al. 1991)."* *"Sediment can increase even when roads comprise just 3% of a basin (Cederholm et al. 1981)."* *"More than half the species present in the study area will likely be negatively impacted by sedimentation from logging roads."* *"In areas made highly turbid (cloudy) from sedimentation, the foraging ability of adults and juveniles may be inhibited through decreased algal production and subsequent declines in insect abundance, or, for visual-feeding taxa dependent on good light, through their inability to find and capture food. Highly silted water may damage gill tissue and cause mortality or physiological stress of adults and juveniles."* **FS Response:** This opposing view is not useful for comparison to the Telegraph Vegetation Project as the evaluation of the mountain pine beetle salvage logging project in Canada is substantially different in both the forest management practices employed as well as the environmental conditions. The forest management actions of the Helena National Forest, including the application of best management practices, are well demonstrated to minimize the amount of sediment reaching streams. The Hydrology, Fisheries, and Soils analyses in Chapter 3 of the EIS fully disclose how the impacts from the selected alternative maintain and often improve aquatic habitat.
Burns, James W., "Some Effects of Logging and Associated Road Construction on Northern California Streams." Transactions of the American Fisheries Society, Volume 1, Number 1, January 1972.	Opposing view #9:*"The road construction and right-of-way logging were immediately detrimental to most aquatic invertebrates in South Fork Caspar Creek"* *"Salmonid populations decreased immediately after the road construction."* *"Sustained logging and associated road construction over a period of many years do not afford either the stream or the 'fish population a chance to recover."* **FS Response:** In the project referenced, 66 kilometers of road were constructed, including four crossings, within 76 meters of the stream. The entire area between the road and stream was logged and dozers disturbed over 41 percent of the stream length in the stream to remove slash and skid trees. Total biomass of invertebrates did not decrease. Recolonization occurred within 2 years and total biomass increased over the control stream (N. Fk Caspar). Salmonid populations recovered to within 20 percent of preconstruction level within 2 years. Author stated that most damage was caused by dozers operating in the stream. The relevance of this article to the Telegraph Vegetation Project is something

Author/Date/Title	Letter 8, Attachment #4 Response to literature cited in opposing views
	of a "lessons learned" tale about the importance of minimizing ground disturbance in and near streams. The practices described in the paper from 1972 are avoided during modern forest management activities. The Telegraph Vegetation Project has riparian habitat conservation areas as well as riparian habitat design features between all harvest units and streams.
Dombeck, Mike. 1998. US Forest Service Chief. Remarks to FS employees and retirees at University of Montana, Missoula, Montana. February 20, 1998.	Opposing view #10: *"Roads often cause serious ecological impacts. There are few more irreparable marks we can leave on the land than to build a road."* **FS Response:** This speech advocated, in part, for a more carefully managed national forest transportation system. Specifically: 1) More carefully considered decisions to build new roads, 2) Eliminate old unneeded roads, 3) Upgrade and maintain the roads important to public access, and 4) Develop new and dependable funding for forest road management. The Telegraph Vegetation Project proposes construction of temporary roads to facilitate the removal of fuels from treatment units. Careful consideration was given to temporary road locations and proposed construction, which incorporate a range of design features and mitigations to minimize impacts. About 30 miles of road would also be decommissioned in the project area under the proposed alternatives 3 and 4. Long-term funding would not be necessary for temporary roads as these would be completely decommissioned once harvest activities are completed.
Forest Service - Southern Research Station Eastern Forest Environmental Threat Assessment Center. "**Forest Fragmentation and Roads**" retrieved at http://www.forestthreats.org/products/su-srs-018/fragmentation	Opposing view #11: *"Fragmentation caused by roads is of special interest because the effects of roads extend tens to hundreds of yards from the roads themselves, altering habitats and water drainage patterns, disrupting wildlife movement, introducing exotic plant species, and increasing noise levels. The land development that follows roads out into rural areas usually leads to more roads, an expansion process that only ends at natural or legislated barriers."* **FS Response:** The provided reference is a webpage from a Forest Health Monitoring National Technical Report from the Southern Research Station of the USDA Forest Service. This document discusses the effects of roads related to habitat fragmentation across the U.S. It is general in nature. The paper provided neither site-specific nor species-specific information relative to Telegraph Vegetation Project nor the management of Helena National Forest management indicator species or designated threatened, endangered, or sensitive species. Please also see response to comment #1 in this attachment (#4).
Forman, Richard T. and Lauren E. Alexander "**Roads and their Major Ecological Effects**" *Annual Review of Ecology and Systematics*, Vol. 29: 207-231, November 1998	Opposing view #12: *"A huge road network with vehicles ramifies across the land, representing a surprising frontier of ecology. Species-rich roadsides are conduits for few species. Road kills are a premier mortality source, yet except for local spots, rates rarely limit population size. Road avoidance, especially due to traffic noise, has a greater ecological impact. The still-more-important barrier effect subdivides populations, with demographic and probably genetic consequences. Road networks crossing landscapes cause local hydrologic and erosion*

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	effects, whereas stream networks and distant valleys receive major peak-flow and sediment impacts. Chemical effects mainly occur near roads. Road networks interrupt horizontal ecological flows, alter landscape spatial pattern, and therefore inhibit important interior species. Thus, road density and network structure are informative landscape ecology assays. Australia has huge road-reserve networks of native vegetation, whereas the Dutch have tunnels and overpasses perforating road barriers to enhance ecological flows. Based on road-effect zones, an estimated 15–20% of the United States is ecologically impacted by roads." **FS Response:** The concepts discussed in the opposing view are all well understood by the ID Team and were considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS.
Franklin, Jerry Ph.D., David Perry Ph.D., Reed Noss Ph.D., David Montgomery Ph.D. and Christopher Frissell Ph.D. 2000. Simplified Forest Management to Achieve Watershed and Forest Health: A Critique. National Wildlife Federation Report.	Opposing view #13: *"Questions to consider: Roads dramatically alter forest ecosystems"* *1. Does the management prescription account for the ecological effects of the road construction and maintenance activities associated with carrying out such activities?* *2. Have alternatives to road building been considered? How does the plan attempt to address the effects of roads?" (page 37)* **FS Response:** The ecological effects of road construction and the maintenance of those roads are thoroughly analyzed in the applicable resource sections of Chapter 3 of the EIS.
Frey, David "Logging Won't Halt Beetles, Fire, Report Says" NewWest.net, 3-03-10	Opposing view #14: *"The authors warned that cutting roads into current roadless areas could bring much more harm to wildlife, soil and fisheries than the beetle-killed trees pose to the forest."* **FS Response:** The Telegraph Vegetation Project does not propose to construct any roads in Inventoried Roadless Areas. This article is irrelevant to the project.
Furniss, Michael J., Michael Love Ph.D. and Sam A. Flanagan "Diversion Potential at Road-Stream Crossings." USDA Forest Service. 9777 1814—SDTDC. December 1997.	Opposing view #15: *"Rarely can roads be designed and built that have no negative impacts on streams. Roads modify natural drainage patterns and can increase hillslope erosion and downstream sedimentation. Sediments from road failures at stream crossings are deposited directly into stream habitats and can have both on-site and off-site effects. These include alterations of the channel pattern or morphology, increased bank erosion and changes in channel width, substrate composition, and stability of slopes adjacent to the channels."* *"All of these changes result in important biological consequences that can affect the entire stream ecosystem. One specific example involves anadromous salmonids, such as salmon and steelhead, that have complex life histories and require suitable stream habitat to support both juvenile and adult life stages."* *"A healthy fishery requires access to suitable habitat that provides food, shelter, spawning gravel, suitable water quality, and access for upstream and downstream migration. Road-stream crossing failures have direct impacts on all of these components."*

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	FS Response: Water quality and the effects of roads on sedimentation, drainage network, change in peak flows, and slope stability were analyzed and are found in the Hydrology section of the Telegraph EIS. All proposed activities would follow proven best management practices. Discussion regarding effects on fisheries and aquatic habitat is in the EIS. There are no anadromous fisheries in the Telegraph project area. The items listed in the opposing view for a healthy fishery are all found in the fish-bearing streams of the Telegraph Creek drainage.
Gable, Eryn. Battling Beetles may not Reduce Forests Risks. Land Letter, March 4, 2010. Retrieved from www.xerces.org	Opposing view #16: *"Barry Noon, a professor of wildlife ecology at Colorado State University, noted that scientific research has consistently shown the adverse effects of roads on hydrologic processes and fish and wildlife populations.* *"One of the key things to recognize is the effects of the roads extend far beyond their immediate footprint," Noon said. For example, "in terms of hydrology, the roads are leading to faster runoff of water, often with great increases in sedimentation, particularly following storm events, and roads in watersheds often lead to increases in the intensity of floods." "* *These changes degrade fish habitat because of the increased sedimentation that leads to decreases in water quality, Noon said. And roads fragment wildlife habitat and create areas that animals avoid, often as result of increased hunting, he said."* **FS Response:** The cited article discusses a recent report addressing the mountain pine beetle epidemic in Colorado and how best to manage forests in the context of limited funding and roadless area designations. The Telegraph Vegetation Project does not propose any road construction in Inventoried Roadless Areas. Also, chapter 2 of the FEIS displays design features including those that apply to temporary road construction.
Grace, Johnny M. III Ph.D. 2003. "Minimizing the impacts of the forest road system." In: Proceedings of the conference 34 international erosion control association; ISSN 1092-2806. International Erosion Control Association: 301-310.	Opposing view #17: *"Roads and skid trails have been identified as a major contributor to increased turbidity of water draining logging areas resulting in increases from 4 to 93 parts per million (Hoover, 1952). Forest roads have been found to have erosion rates from one to three orders of magnitude greater than similar undisturbed areas (Megahan, 1974) and perhaps account for as much as 90 percent of all forest erosion (Megahan, 1972). Forest roads can also cause soil erosion and stream sedimentation, which adversely impact on the nation's water quality (Authur et al., 1998).* **FS Response:** The opposing view cites several very old research articles that formed the basis for the modern best management practices utilized today. Some of the erosion control techniques advocated in the research publication are employed in best management practices used in Montana and in the Telegraph Vegetation Project.
Gucinski, Hermann Ph.D., Michael J. Furniss, Robert R. Ziemer Ph.D. and Martha H. Brookes, Editors.	Opposing view #18: *"Roads have well-documented, short- and long-term effects on the environment that have become highly controversial,*

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2001. **"Forest Roads: A Synthesis of Scientific Information."** USDA Forest Service, General Technical Report *PNW-GTR-509*.	*because of the value society now places on unroaded wildlands and because of wilderness conflicts with resource extraction."* *"(Road) consequences include adverse effects on hydrology and geomorphic features (such as debris slides and sedimentation), habitat fragmentation, predation, road kill, invasion by exotic species, dispersal of pathogens, degraded water quality and chemical contamination, degraded aquatic habitat, use conflicts, destructive human actions (for example, trash dumping, illegal hunting, fires), lost solitude, depressed local economies, loss of soil productivity, and decline in biodiversity."* **FS Response:** PNW-GTR-509 describes the effects roads have on ecosystems. It is a companion paper to "Roads Analysis: Informing Decisions About Managing the National Forest Transportation System" (USDA FS 1999). The report details the known issues related to road impacts on physical and biological resources, road impacts at various scales, and the socio-economics of roads. The report then describes the known science surrounding these issues. The focus of the report is to help the reader understand how roads function in the landscape. The concepts discussed in the opposing view are all well understood by the ID Team and were considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS.
Hann, W.J. et al. 1997 Landscape dynamics of the Basin. Pp. 337-1,055 in: Quigley, T.M. and S.J. Arbelbide (eds.) An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins: Volume II. USDA Forest Service, PNW-GTR-405	Opposing view #19: *"Fires in the roaded areas are more intense, due to drier conditions, wind zones on the foothill/valley interface, high surface-fuel loading, and dense stands."* **FS Response:** A thorough review of PNW-GTR-405, *An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins: Volume II* revealed the opposing view quote is not contained in the document. A response to this opposing view is not possible without an understanding of the context to which the quote is attributed.
Haskell, David G. Ph.D. 1999 "Effects of Forest Roads on Macroinvertebrate Soil Fauna of the Southern Appalachian Mountains. Conservation Biology, Vol. 14, No. 1 (Feb., 2000), pp. 57-63.	Opposing view #20: *"Many forested landscapes are fragmented by roads, but our understanding of the effects of these roads on the function and diversity of the surrounding forest is in its infancy. I investigated the effect of roads in otherwise continuous forests on the macroinvertebrate fauna of the soil. I took soil samples along transects leading away from the edges of unpaved roads in the Cherokee National Forest in the Southern Appalachian mountains of the United States. Roads significantly depressed both the abundance and the richness of the macroinvertebrate soil fauna. Roads also significantly reduced the depth of the leaf-litter layer. These effects persisted up to 100 m into the forest. Wider roads and roads with more open canopies tended to produce steeper declines in abundance, richness, and leaf-litter depth, but these effects were significant only for canopy cover and litter depth. The macroinvertebrate fauna of the leaf litter plays a pivotal role in the ability of the soil to process energy and nutrients. These macroinvertebrates also provide prey for vertebrate species such as salamanders and ground-foraging birds. The effect of roads on the surrounding forest is compounded by the sprawling nature of the road system in this and many other forests. My data suggest that even relatively narrow roads through*

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	forests can produce marked edge effects that may have negative consequences for the function and diversity of the forest ecosystem." **FS Response:** This opposing view is not relevant to the Telegraph Vegetation Project. This study took place in Tennessee in the southern Appalachian Mountains with hardwood tree species; a substantially different ecosystem than that of the project area. The type of leaf litter produced and the macroinvertebrates found in Tennessee are not comparable to the montane coniferous forests of the northern Rocky Mountains in Montana. In summary, the author found that roads depressed the abundance and diversity of macroinvertebrates, due to a reduction in leaf litter. Though we do not inventory macroinvertebrates as a matter of course in field surveys, complying with the Northern Region Soil Quality Standards would limit litter layer disturbance within the proposed harvest units. The opposing view's statement that even relatively narrow roads can produce edge effects that may have negative consequences was considered by each of the applicable resource specialists in the EIS. The environmental effects of the existing road system and the selected segments of new construction were thoroughly considered in Chapter 3 of the EIS.
Hawbaker, Todd J., Volker C. Radeloff, Murray K. Clayton, Roger B. Hammer, and Charlotte E. Gonzalez-Abraham 2006. Road Development, Housing Growth, And Landscape Fragmentation In Northern Wisconsin: 1937–1999. Ecological Applications 16:1222	Opposing view #21: *"Roads remove habitat, alter adjacent areas, and interrupt and redirect ecological flows. They subdivide wildlife populations, foster invasive species spread, change the hydrologic network, and increase human use of adjacent areas. At broad scales, these impacts cumulate and define landscape patterns."* **FS Response:** This reference is a scientific journal article that looks at the dynamics of road networks over time and how they impact landscape patterns. More specifically, the study looked at relationships between road density changes, development, and landscape patterns, focusing on housing development. From a wildlife standpoint, the reference mentions in a broad context roads as sources of habitat fragmentation, spread of invasive species and increased human use or presence. The environmental effects of the existing road system and the selected segments of new construction were thoroughly considered in Chapter 3 of the EIS. The concepts discussed in the opposing view are all well understood by the ID team. Please also see the response to opposing view #1.
Ivins, Molly. 1997. Creators Syndicate, opinion piece. August 3, 1997. Retrieved from http://www.creators.com/opinion/molly-ivins/molly-ivins-august-3-1997-08-03.html	Opposing view #22: *"Last winter was unusually wet in the Pacific Northwest. The result was landslides all over caused by logging roads; five people died, spawning streams were ruined, water supplies were contaminated and the flooding was tremendously aggravated. According to David Bayles, conservation director of the Pacific Rivers Council, aerial surveys documented more than 650 landslides in February in Washington and Oregon alone. The stupidest and most dangerous practice is allowing logging roads on steep slopes — that's really asking for it.*

Author/Date/Title	Letter 8, Attachment #4 Response to literature cited in opposing views
	You may ask yourself why the taxpayers are expected to pony up to build roads for profitable logging companies. Build roads for the timber companies in order to stimulate the U.S. logging, paper and building industries. There's just one problem. A lot of U.S. logs get shipped overseas, mostly to Japan. We're actually subsidizing Japanese companies while doing terrible damage to our environment and not helping the U.S. job scene much except when it comes to cutting *Start with the assumption that the U.S. Forest Service a component of the Department of Agriculture, is simply an auxiliary branch of the timber industry and you'll pretty much have the picture of what's going on. Last winter, the Forest Service refused a bid at a timber auction from an environmentalist who wanted to save, not harvest, a stand of evergreens in the Okanogan National Forest in Washington. Instead, the Forest Service accepted a bid of $15,000 from a logging company that cut 3.5 million board-feet of lumber in that stand. Try to find a price like that at Home Depot."* **FS Response:** The geomorphology and climate of the Pacific Northwest are completely different from that of the Telegraph project area. As to exporting logs overseas, 36 CFR 223.188 (Prohibitions against exporting unprocessed Federal timber) specifically prohibits the exporting of unprocessed Federal timber: *No person who acquires unprocessed timber originating from Federal lands west of the 100th meridian in the contiguous 48 States may export such timber from the United States, or sell, trade, exchange, or otherwise convey such timber to any other person for the purpose of exporting such timber from the United States. This prohibition does not apply to specific quantities of grades and species of such unprocessed Federal timber that the Secretary of Agriculture determines to be surplus to domestic manufacturing needs.* The environmentalist who bid on a timber sale on the Okanogan National Forest defaulted on the contract when he was not able to comply with the terms of the contract.
Jones, Julia A. Ph.D., Frederick J. Swanson Ph.D. Beverley C. Wemple Ph.D., and Kai U. Snyder. "Effects of roads on hydrology, geomorphology, and disturbance patches in stream networks." *Conservation Biology* 14, No. 1. 2000.	Opposing view #23: *"Although disturbance patches are created by peak flow and debris flow disturbances in mountain landscapes without roads, roads can alter the landscape distributions of the starting and stopping points of debris flows, and they can alter the balance between the intensity of flood peaks and the stream network's resistance to change."* **FS Response:** The impacts of roads in mountain landscapes on peak flows is well understood by the project hydrologist and well documented in the hydrology section of Chapter 3 of the EIS. Debris flow is a rare occurrence in the streams of central Montana due to the relatively small size of the streams and the implementation of INFISH Riparian Habitat Conservation Areas that buffer the streams from unnatural debris input.
Kahklen, Keith. **"A Method for Measuring Sediment Production from Forest Roads."** Pacific	Opposing view #24: *"In the Pacific Northwest, the two main processes that contribute to sediment production are mass failure and surface erosion from forest roads (Fredriksen 1970, Reid and Dunne 1984). In*

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Northwest Research Station, USDA Forest Service. Research note *PNW-RN-529*, April 2001.	*the Clearwater River basin in the State of Washington, as much as 40 percent of the sediment produced in the watershed was attributed to logging roads (Reid 1980).* **FS Response:** This literature is an excellent source of data for analyzing effects of roads in the Pacific Northwest; however, the terrain and climate are considerably different that of the project area. Additionally, the opposing view cites several very old research articles that formed the basis for the modern best management practices utilized today. Some of the erosion control techniques advocated in the research publication are employed in best management practices used in Montana and in the Telegraph Vegetation Project. The geomorphology and climate of the Pacific Northwest are completely different from that of the Telegraph project area.
Karr, James R. Ph.D., Christopher A. Frissell Ph.D., Jonathan J. Rhodes, David L. Perry Ph.D. and G. Wayne Minshall Ph.D. Excerpt from a letter to the Subcommittee on Forests & Forest Health U.S. House of Representatives. 3 July, 2002. http://www.nativeforest.org/campaigns/wildfire_info_center/letter_from_beschta.htm	Opposing view #25: *"It is indisputable that roads are one of the greatest threats to the ecological integrity of forested systems and associated river, wetland, lake, and coastal ecosystems. Yet, the USFS has failed to adopt a policy that mandates reversing the worst ecological effects of roads, or that precludes incursion of roads into roadless areas. Despite widespread recognition of these facts, the USFS diverts staff and money to extraordinarily costly salvage logging projects at the expense of reducing the extent of the road network or undertaking needed fine-fuels reductions in unburned forests."* **FS Response:** The referenced document is excerpt from a letter, which is a rebuttal to the Forest Service Chiefs' testimony regarding the "Beschta report," which pertains to post-fire salvage logging. The opposing view has no relevance to the Telegraph Vegetation Project as the project does not include fire salvage operations.
Lawren, Bill 1992 "Singing the Blues for Songbirds: Bird lovers lament as experts ponder the decline of dozens of forest species" *National Wildlife*	Opposing view #26: *"Forest fragmentation, as scientists call the intentional felling of woodland, is actually two processes. In populated areas such as the Atlantic seaboard, it means reduction in the size of forest tracts, usually due to suburbanization and development. In less inhabited areas--northern New England, for example--forest fragmentation refers to isolation of one patch of forest from another by logging, or by the building of roads or power lines."* **FS Response:** It is unclear as to what the specific point concerning fragmentation is relative to the Telegraph Vegetation Project. Please refer to the responses to opposing views #1 and #3 in this attachment (#4) and the response to comment #11 in attachment #1 for discussions relating to effects to wildlife and habitat from fragmentation and roads. This reference is an article giving a synopsis of evidence and research showing declines in songbirds at regional scales in response to forest fragmentation. The reference is not current and does not provide best available science or specific information related to the Telegraph Project; nor does the commenter demonstrate a specific connection to this project.

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Lowe, Kimberly Ph.D.,"Restoring Forest Roads." A Northern Arizona University Ecological Restoration Institute publication *Working Paper 12*. June, 2005.	Opposing view #27: *"The compaction of forest road soils is known to reduce aeration, porosity, infiltration rates, water movement, and biological activity in soils. Research indicates that soil bulk density, organic matter, moisture, and litter depths are much lower on roads than on nearby forest lands. Macropores, which provide soil drainage and infiltration, have been shown to significantly decrease in size as a result of road construction and use. Reduced infiltration and increased compaction promote soil erosion, especially during the seasonal southwestern monsoon rains (Elseroad 2001)."* *"Physical disturbances caused by road construction and vehicle use create ideal conditions for colonization by invasive exotic plant species. The use of roads by vehicles, machinery, or humans often aids the spread of exotic plant seeds. Once established, they can have long-term impacts on surrounding ecosystems and can be difficult to remove."* *"Roads are known to cause habitat fragmentation. Many create ecological 'edges' with different plant species, light levels, and hiding cover, all of which may alter animal survival, reproductive success, and movement patterns. The introduction of exotic plants can disrupt the availability of native vegetation used by wildlife for food and shelter (Trombulak and Frissell 1999)."* *"Forest roads often develop a water-repellent soil layer caused by lack of vegetative cover and changes in soil composition. This can substantially influence how runoff is processed. Erosion, the formation of water channels beside the road, and increased sediment loads in nearby streams are common results of this process (Baker 2003)."* *"Because they provide easier access to many forest tracts, forest roads often allow more human-caused fires to be ignited."* **FS Response:** The cited reference looks at the dynamics of road networks over time and how they impact landscape patterns. More specifically, the study looked at relationships between road density changes, development, and landscape patterns, focusing on housing development. From a wildlife standpoint, the reference mentions in a broad context that roads can contribute to habitat fragmentation, the spread of invasive species, and increased human use or presence. The Soils section of Chapter 3 of the EIS and the Region 1 Forest Service Manual for Soil Management (FSM 2500-99-1) both acknowledge a forest road experiences changed properties of reduced aeration, porosity, infiltration rates, water movement, and biological activity. A water-repellent layer caused by lack of vegetative cover and changes in soil composition is common and expected. National Forest System roads are not considered part of the productive vegetative land base and function of the road surface for the qualities described in the opposing view are not managed for or included in Forest Plan outputs. Please see response to opposing view #1 for more specifics on how effects to wildlife and wildlife habitat were addressed in the EIS. The invasive plant and wildland fire ignition concepts discussed in the opposing view are all well understood by the ID Team and were

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	considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS.
Luce, Charles H. Ph.D., 2002. "Hydrological processes and pathways affected by forest roads: what do we still need to learn?" Hydrologic Processes: 16(14), 2901–2904.	Opposing view #28: *"Almost everywhere people live and work they build and use unimproved roads, and wherever the roads go, a range of environmental issues follows."* *"Among the environmental effects of unimproved roads, those on water quality and aquatic ecology are some of the most critical. Increased chronic sedimentation, in particular, can dramatically change the food web in affected streams and lakes."* *"The nearly impervious nature of road surfaces (or treads) makes them unique within forested environments and causes runoff generation even in mild rainfall events, leading to chronic fine sediment contributions."* *"If we look at the issue of what we need to learn or the research priorities for forest road hydrology, I would argue that the areas of cutslope hydrology and effectiveness of restoration efforts are perhaps most critical."* *"At a few sites in the mountains of Idaho and Oregon a substantial portion of the road runoff (80–95%) came from subsurface flow intercepted by the cutslope (Burroughs et al., 1972; Megahan, 1972; Wemple, 1998)."* **FS Response:** This commentary piece on forest road hydrology was written to call for prioritizing research in the areas of the effects of roads on hillslope hydrological functions and on the effectiveness on eliminating the effects of roads during restoration activities. Since this commentary was written, a considerable amount of research has been conducted and published regarding hillslope hydrology and forest roads. These research articles were used and cited in the Hydrology section in chapter 3 of the EIS.
Malecki, Ron W. "A New Way to Look at Forest Roads: the Road Hydrologic Impact Rating System (RHIR)" The Road-RIPorter, Autumn Equinox, 2006 http://www.wildlandscpr.org/files/uploads/RIPorter/rr_v11-3.pdf	Opposing view #29: *"One of the greatest impacts of roads and (especially motorized) trails is their effect on the hydrology of natural landscapes, including the flow of surface and ground water and nutrients. These hydrologic effects are responsible for changes to geomorphic processes and sediment loads in roaded areas (Luce and Wemple 2001)." (pg. 12)* **FS Response:** Responses to opposing views regarding hillslope hydrological effects from forest roads are found throughout this document. Please see the responses to opposing views #5 and #28. The impacts of roads in mountain landscapes on hillslope hydrology is well understood by the project hydrologist and well documented in the Hydrology section of Chapter 3 of the EIS.
McCashion, J. D. and R. M. Rice Ph.D. 1983. "Erosion on logging roads in northwestern California: How much is avoidable?" Journal of Forestry 81(1): 23-26.	Opposing view #30: *"A study was made on 344 miles of logging roads in northwestern California to assess sources of erosion and the extent to which road-related erosion is avoidable. At most, about 24 percent of the erosion measured on the logging roads could have been prevented by conventional engineering methods. The remaining 76 percent was caused by site conditions and choice of alignment. On 30,300 acres of*

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	commercial timberland, an estimated 40 percent of the total erosion associated with management of the area was found to have been derived from the road system." **FS Response:** This 30-year-old research paper was prepared in a time before modern best management practices had been developed, tested, and proved to provide superior reductions in sediment delivery to streams. Papers like this are useful in that they formed the basis for the modern best management practices utilized today. The effectiveness of BMPs is well documented in the Hydrology section of Chapter 3 of the EIS.
McFero III, Grace, J. "Sediment Plume Development from Forest Roads: How are they related to Filter Strip Recommendations?" An ASAE/CSAE Meeting Presentation, Paper Number: 045015, August 1-4, 2004	Opposing view #31: *"Research has shown that roads can have adverse impacts on the water quality on the forest landscape (Authur et al. 1998; Binkley and Brown 1993; Megahan et al. 1991). The forest road system has been identified by previous research as the major source of soil erosion on forestlands (Anderson et. al 1976; Patric 1976; Swift 1984; Van Lear et al. 1997). Furthermore, roads are cited as the dominant source of sediment that reaches stream channels (Packer 1967; Trimble and Sartz 1957; Haupt 1959)."* **FS Response:** The referenced material discusses the effects of filter strips and their use to control sedimentation. The study was completed in Alabama and Georgia, which have substantially different soils, climate, and forest conditions. They also have different road building practices that are unique from how the Forest Service builds and maintains roads in Montana. This paper is useful in that filter strips are an integral part of some best management practices utilized on northwest Montana forest roads.
McGarigal, Kevin Ph.D., William H. Romme Ph.D. Michele Crist Ph.D. and Ed Roworth Ph.D. "Cumulative effects of roads and logging on landscape structure in the San Juan Mountains, Colorado (USA)" Landscape Ecology, Volume 16, Number 4 / May, 2001	Opposing view #32: *"Overall, roads had a greater impact on landscape structure than logging in our study area. Indeed, the 3-fold increase in road density between 1950–1993 accounted for most of the changes in landscape configuration associated with mean patch size, edge density, and core area."* **FS Response:** This paper also states: *"We investigated the magnitude of change in landscape structure resulting from roads and logging since the onset of timber harvest activities in 1950. We found limited evidence for significant impacts in our study area when all lands within the landscape were considered."* The paper makes a distinction between the impacts of roads and timber harvest at different scales and at areas of different management emphasis. This reference also includes a discussion about how not all sediment sources from roads can be avoidable. Road maintenance and application of best management practices prior to project implementation will install new culverts and recondition existing culverts that will decrease the effects the existing roads have on the stream network. The Hydrology section of Chapter 3 of the EIS acknowledges the effects roads can have on sediment production and includes design features to reduce sediment in the project area.

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McLellan, Bruce N. "Relationships between Human Industrial Activity and Grizzly Bears" Bears: Their Biology and Management, Vol. 8 International Conference on Bear Research and Management February 1989 (1990), pp. 57-64	Opposing view #33: *"Road construction in remote areas appears to be the major long term impact of resource extraction industries and the most significant problem facing grizzly bears in most locations. Open roads are an influence in all 5 ways that people affect bears. Vehicles on roads can harass bears, displace them from quality habitats, and cause reduced bear use of altered habitats, such as cutting units. Bears that are displaced from roads may cause social disruption in areas away from roads. Finally, roads permit access for many people and some of these will shoot bears." (Pg. 62)* **FS Response:** This paper reports one of many studies that (1) have documented grizzly bear avoidance and displacement from areas with human presence and (2) have concluded that human-caused mortality is a primary cause of death for adult grizzly bears. This is relevant to the Telegraph Vegetation Project, which applied more recent and localized science on this topic. The Wildlife section in chapter 3 of the FEIS analyzes potential project effects on grizzly bears.
Megahan, Walter F. Ph.D. "Predicting Road Surface Erosion from Forest Roads in Washington State" from a presentation presented at the 2003 Geological Society of America meeting	Opposing view #34: *"Erosion from forest roads can be a large source of sediment in watersheds managed for timber production."* **FS Response:** Responses to opposing views regarding sediment production from forest roads are found throughout this document. Please see the responses to opposing views #3 and #15. The impacts of roads in mountain landscapes on sediment production to streams is well understood by the project hydrologist and well documented in the Hydrology section of Chapter 3 of the EIS.
Montgomery, David Ph.D., Statement at a Press Conference with Senator Robert Torricelli about S. 977 and HR 1376), the Act to Save America's Forests April 28, 1998, U.S. Capitol	Opposing view #35: *"Today, addressing the adverse impacts of forest roads is consistently identified as one of the highest watershed restoration priorities in U.S. forests—in many forested watersheds in the western United States there is a greater road density than stream density. It is simply irrational to spend millions of dollars subsidizing further forest road construction when we are simultaneously spending millions of dollars to offset detrimental effects associated with similar actions in the past."* **FS Response:** This opposing view is beyond the scope of project level planning such as Telegraph Vegetation Project as the view more directed at national level budgetary priority setting. Forest Service policy at the national level concerning road management is in part found in the Code of Federal Regulations and Forest Service Manual (FSM) direction. FSM 7710.1 states: *1. Travel Management (36 CFR Part 212, Subparts A, B, and C). Subpart A of these regulations establishes requirements for administration of the forest transportation system, including roads, trails, and airfields, and contains provisions for acquisition of rights-of-way. Subpart A also requires identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of NFS lands and use of a science-based roads analysis at the appropriate scale in determining the minimum road system. Subpart B describes the requirements for designating*

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	roads, trails, and areas for motor vehicle use and for identifying designated roads, trails, and areas on a motor vehicle use map (MVUM). Subpart C provides for regulation of use of over-snow vehicles on NFS roads, on NFS trails, and in areas on NFS lands. FSM 7712, Travel Analysis, states: *Travel analysis assesses the current forest transportation system and identifies issues and assesses benefits, problems, and risks to inform decisions related to identification of the minimum road system per 36 CFR Part 212.5(b)(1) and designation of roads, trails and areas for motor vehicle use per 36 CFR Part 212.51. Travel analysis is not a decision-making process. Rather, travel analysis informs decisions relating to administration of the forest transportation system and helps to identify proposals for changes in travel management direction (ex. 01).* Project-level planning regarding transportation management was conducted using this travel analysis process.
Noss, Reed F., Ph.D. 1995. "The Ecological Effects of Roads or the Road to Destruction" Wildlands CPR	Opposing view #36: *"Nothing is worse for sensitive wildlife than a road. Over the last few decades, studies in a variety of terrestrial and aquatic ecosystems have demonstrated that many of the most pervasive threats to biological diversity - habitat destruction and fragmentation, edge effects, exotic species invasions, pollution, and overhunting - are aggravated by roads. Roads have been implicated as mortality sinks for animals ranging from snakes to wolves; as displacement factors affecting animal distribution and movement patterns; as population fragmenting factors; as sources of sediments that clog streams and destroy fisheries; as sources of deleterious edge effects; and as access corridors that encourage development, logging and poaching of rare plants and animals."* *"Most public agencies disregard the ecological impacts of roads, and attempt to justify timber roads as benefiting recreation and wildlife management. Even when a land manager recognizes the desirability of closing roads, he or she usually contends that such closures would be unacceptable to the public."* *"The Forest Service and other public agencies will claim that road closures, revegetation, and other restorative measures are too expensive to be implemented on a broad scale. But much of the approximately $400 million of taxpayers' money squandered annually by the Forest Service on below-cost timber sales goes to road-building. Road maintenance is also expensive. Virtually all of this money could be channeled into road closures and associated habitat restoration. This work would be labor-intensive, and providing income to the many laid off loggers, timber sale planners, and road engineers -- for noble jobs, rather than jobs of destruction!"* **FS Response:** The cited reference is an opinion piece that discusses the effects of all roads in general and potential mitigation measures to reduce the effects. Many of the effects discussed in this paper are those associated with paved, well-maintained, high-speed roads. However, it is recognized that lower-standard, unpaved Forest roads can have

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	effects as well. Specifically, the article addresses the following potential road-related impacts: road kill, road aversion, isolation of populations, barriers, negative edge effects, invasive weeds, loss of forest interior habitats, brown-headed cowbird parasitism, human access, poaching, collisions, snag removal, and increases in fire ignitions. In a section titled Impacts on Terrestrial Habitat, the article states that *"A narrow logging road with no maintained verge would not be expected to generate substantial edge effects, particularly if surrounded by a tall forest canopy. In this sense, the road would not differ much from a hiking trail (even trails create some edge effects, however, such as invasion of weedy plants caused by pant- legs dispersal). As forest roads are 'improved,' road clearance increases and allows more penetration of sunlight and wind. Edge species are then attracted to these openings. Two-lane roads with maintained rights-of-way and all interstate highways are lined by edge habitat. A forest criss-crossed by improved roads may be largely edge habitat, and its value for conservation of native flora and fauna diminished accordingly."* This rationale acknowledges that small forest roads typically have much less of an impact on wildlife than larger, higher-volume road systems. The ID Team wildlife biologist is well aware of the effects of forest roads on wildlife habitat. The analysis of the impact of forest roads on wildlife and their habitat at the project level is thoroughly presented in the wildlife. Also, please see the response to opposing view #1. In response to the third paragraph of this opposing view regarding national level transportation policy, please see the response to opposing view #35.
Ortega, Yvette K.; Capen, David E. 1999. "Effects of forest roads on habitat quality for Ovenbirds in a forested landscape" Auk. 116(4): 937-946.	Opposing view #37: "*Numerous studies have reported lower densities of breeding Ovenbirds (Seiurus aurocapillus) adjacent to forest edges. However, none of these studies has considered habitat use and reproductive success to address mechanisms underlying the observed pattern, and most were conducted in fragmented landscapes and ignored juxtapositions of forest with narrow openings such as roads. We studied the influence of forest roads on Ovenbird density in an extensively forested region of Vermont, evaluating habitat use and reproductive success relative to mechanisms proposed to explain the density-edge relationship. Territory densities on seven study plots were 40% lower within edge areas (0 to 150 m from unpaved roads) than within interior areas (150 to 300 m from roads). We simulated the distribution of Ovenbird territories and concluded that passive displacement, where birds perceive habitat interfaces as boundaries and limit their territories entirely to forest habitat, did not account for the observed density-edge pattern. Territory size was inversely related to distance from roads, providing an alternative explanation for reduced densities near edges and suggesting that habitat quality was higher away from roads. Pairing success was lower within edge areas than within interior zones, but the difference was not statistically significant. The proportion of males that produced fledglings did not differ between edge and interior areas. We conclude that habitat quality for Ovenbirds may be lower within 150 m of*

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	unpaved roads in extensive forested landscapes, affecting territory density and possibly reproductive success." **FS Response:** The referenced journal article analyzed the effects of roads and associated edge effects on ovenbird populations. The document concluded that "*habitat quality for ovenbirds may be lower within 150 m of unpaved roads in extensive forested landscapes, affecting territory density and possibly reproductive success."* Effects to the ovenbird (*Seiurus aurocapillus*) were not analyzed in the Telegraph Vegetation project as the species is not typically found on the Helena National Forest. However, the focus of this document is primarily the negative edge effects of roads on forest interior species. Please refer to the response to opposing view #1 in this attachment (#4) for more discussion on the effects of roads to wildlife habitat.
Reed, R.A., Johnson-Barnard, J., and Baker, W.A. 1996. "Contribution of Roads to Forest Fragmentation in the Rocky Mountains." Conservation Biology 10: 1098-1106.	Opposing view #38: *"Increasingly, previously extensive, continuous tracts of forest are being reduced to widely dispersed patches of remnant forest vegetation by logging and road-building, but few measures of the effects of roads on forest fragmentation are available. Fragmentation affects animal populations in a variety of ways, including decreased species diversity and lower densities of some animal species in the resulting smaller patches. This study seeks to quantify the effects of roads and logging activities on forest habitat."* *"Roads precipitate fragmentation by dissecting previously large patches into smaller ones, and in so doing they create edge habitat in patches along both sides of the road, potentially at the expense of interior habitat. As the density of roads in landscapes increases, these effects increase as well. McGurk and Fong (1995) considered the additive effects of clearcuts and roads, but did not measure the amount of associated edge habitat. Thus a more direct measurement of the impacts of roads on landscapes is needed."* **FS Response:** The provided reference study looked at habitat fragmentation from a negative edge effect standpoint in coniferous forests of Wyoming and how the fracturing of interior forests may impact forest interior species. The study concluded that roads associated with logging activities often have potentially detrimental impacts on animal and plant communities. The authors suggested that timber harvests should be planned to minimize impact on the landscape and exacerbation of the current landscape fragmentation problems on many forestlands. Please refer to the response to opposing views #1 and #37 in this attachment (#4).
Reid, L. M. Ph.D. and T. Dunne (1984), "Sediment Production from Forest Road Surfaces," Water Resources Research, 20(11), 1753–1761.	Opposing view #39: *"Erosion on roads is an important source of fine-grained sediment in streams draining logged basins of the Pacific Northwest. Runoff rates and sediment concentrations from 10 road segments subject to a variety of traffic levels were monitored to produce sediment rating curves and unit hydrographs for different use levels and types of surfaces. These relationships are combined with a continuous rainfall record to calculate mean annual sediment yields from road*

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	segments of each use level. A heavily used road segment in the field area contributes 130 times as much sediment as an abandoned road. A paved road segment, along which cut slopes and ditches are the only sources of sediment, yields less than 1% as much sediment as a heavily used road with a gravel surface." **FS Response:** This study found that traffic level on gravel-surfaced roads was the primary factor determining the amount of sediment produced from the road surface. Rainfall mobilized fines brought to the surface, delivering the fines to cross drain culverts. The study was conducted in western Washington where annual precipitation during study averages greater than 150 inches. This nearly 30-year-old research paper was prepared in a time before modern best management practices had been developed, tested, and proved to provide superior reductions in sediment delivery to streams. Papers like this are useful in that they formed the basis for the modern best management practices utilized today. The effectiveness of best management practices is well documented in the Hydrology section of Chapter 3 of the EIS.
Reid, Leslie M. Ph.D., Robert R. Ziemer Ph.D., and Michael J. Furniss 1994. **"What do we know about Roads?"** USDA Forest Service.	Opposing view #40: *"Roads are associated with high sediment inputs and altered hydrology, both of which can strongly influence downstream channel habitats. Roads are also important as a source of indirect human impacts and as an agent of vegetation change and wildlife disturbance."* *"Any ground disturbance increases the potential for erosion and hydrologic change, and roads are a major source of ground disturbance in wildlands. Compacted road surfaces generate overland flow, and much of this flow often enters the channel system, locally increasing peak flows. Localized peak flows are also increased where roads divert flow from one swale into another, and where roadcuts intercept subsurface flows."* *"Overland flow from the road surface is a very effective transport medium for the abundant fine sediments that usually are generated on road surfaces. Road drainage also can excavate gullies and cause landslides downslope in swales. Cut and fill slopes are often susceptible to landsliding, and road-related landsliding is the most visible forestry-related erosional impact in many areas."* **FS Response:** This opposing view is of the same nature and scope as previous opposing views found above. The concepts discussed in the opposing view are all well understood by the ID Team and were considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS. Please also see the response to opposing views #3, #4, #5, and #15.
Rice, Raymond M. Ph.D., Forest B. Tilley and Patricia A. Datzman. 1979. "Watershed's Response to Logging and Roads: South Fork of Caspar Creek, California, 1967-	Opposing view #41: *"Disturbances from road building and logging changed the sediment/discharge relationship of the South Fork from one which was supply dependent to one which was stream power dependent, resulting in substantial increases in suspended sediment discharges."*

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1976."USDA Forest Service, Research Paper PSW-146.	*"Road construction and logging appear to have resulted in increases in average turbidity levels (as inferred from suspended sediment increases) above those permitted by Regional Water Quality Regulations."* **FS Response:** This 34-year-old research paper was prepared in a time before modern best management practices had been developed, tested, and proved to provide superior reductions in sediment delivery to streams. Papers like this are useful in that they formed the basis for the modern best management practices utilized today. The effectiveness of best management practices is well documented in the Hydrology section of Chapter 3 of the EIS.
Riedel, Mark S. Ph.D. and James M. Vose Ph.D., "Forest Road Erosion, Sediment Transport and Model Validation in the Southern Appalachians." Presented at the Second Federal Interagency Hydrologic Modeling Conference, July 28 – August 1, 2002.	Opposing view #42: *"Sediment eroded from gravel roads can be a major component of the sediment budget in streams in this region (Van Lear, et al, 1995)."* **FS Response:** This reference from Georgia and Tennessee discusses different sediment sources associated with watershed restoration planning. Although the landscape for this project in Montana is different than that of the southeastern U.S., the process used to develop this project is similar. The installation of new culverts and reconditioning of existing culverts will decrease the effects roads in the project area have on the stream network and sediment contributions. This opposing view is of the same nature and scope as previous opposing views found above. The concepts discussed in the opposing view are all well understood by the ID Team and were considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS. Please also see the response to opposing views #3, #4, #5, and #15.
Rowland, M. M., M. J. Wisdom, B. K. Johnson, and M. A. Penninger 2005. "Effects of Roads on Elk: Implications for Management in Forested Ecosystems." Pages 42-52 in Wisdom, M. J., technical editor, The Starkey Project: a synthesis of long-term studies of elk and mule deer Reprinted from the 2004 Transactions of the North American Wildlife and Natural Resources Conference, Alliance Communications Group.	Opposing view #43: *"Early studies of elk were among the first to address effects of roads on wildlife, establishing a precedent for subsequent research on a wide range of terrestrial and aquatic species. These early elk-roads studies included those reported in a symposium on the topic in 1975 (Hieb 1976), the seminal studies of Jack Lyon in Montana and northern Idaho (Lyon 1979, 1983, 1984), the Montana Cooperative Elk-Logging Study (Lyon et al. 1985), and work by Perry and Overly (1977) in Washington and Rost and Bailey (1979) in Colorado.* *As research and analysis techniques have become more sophisticated, particularly with the advent of geographic information systems (GIS) and high-resolution remote imagery, the study of effects of roads on terrestrial and aquatic communities has evolved into a unique discipline of "road ecology" (Forman et al. 2003). Road effects are far more pervasive than originally believed and include such disparate consequences as population and habitat fragmentation, accelerated rates of soil erosion, and invasion of exotic plants along roadways. Indeed, "in public wildlands management, road systems are the largest human investment and the feature most damaging to the environment" (Gucinski et al. 2001:7). Summaries of the effects of roads on wildlife habitats and biological systems in general have been compiled by Forman and*

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	Alexander (1998), Trombulak and Frissell (2000), Gucinski et al. (2001), Forman et al. (2003) and Gaines et al. (2003)." **FS Response:** The cited document describes the current knowledge on road effects to elk; outlines how a distance-band approach could be used instead of the traditional road density approach to assess road effects to elk and habitat effectiveness; and discusses the broader implications of road-related policies and land management with regard to elk. This document was used in the effects analysis for elk and referenced accordingly. The effects analysis for elk is located in the Wildlife section of chapter 3 in the FEIS which includes the methodology for this analysis.
Shanley, James B. and Beverley Wemple Ph.D. "Water Quantity and Quality in the Mountain Environment" Vermont Law Review, Vol. 26:717, 2002	Opposing view #44: *"The effects of forest roads on hydrology are related to the effects of forest clearing. Most logging requires road access, and the roads often remain after the logging, so there are both short and long-term effects.*[94] *Forest road surfaces are relatively impermeable. Water readily runs over the road surface and associated roadside ditches, often directly to a stream channel, with the net effect of extending channel networks and increasing drainage density.*[95] *In addition to providing conduits for overland flow, forest roads involve slope-cuts and ditching that may intersect the water table and interrupt natural subsurface water movement.*[96] *This diversion of subsurface water may be quantitatively more important than the overland flow of storm water in some watersheds.*[97] *The importance of roads in altering basin hydrology has been underscored in paired-watershed studies and recent modeling studies.*[98] *" (Pgs. 730 and 731)* **FS Response:** This reference discusses hydrology in mountains in a general textbook approach presenting a number of accepted traits associated with wildland hydrology. The excerpt deals with the effects forest roads can have on hydrology based on a few other cited sources. The EIS fully acknowledges these effects and discusses them in detail in the Hydrology section in the EIS.
Swift Jr., L. W. "Soil losses from roadbeds and cut and fill slopes in the Southern Appalachian Mountains." Southern Journal of Applied Forestry 8: 209-216. 1984.	Opposing view #45: *"Roads are often the major source of soil erosion from forested lands (Patric 1976)."* *"Generally, soil loss is greatest during and immediately after construction."* **FS Response:** This opposing view is of the same nature and scope as previous opposing views found above. The concepts discussed in the opposing view are all well understood by the ID Team and were considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS. Please also see the response to opposing views #3, #4, #5, and #15.
Trombulak, Stephen C. Ph.D. and Christopher A. Frissell Ph.D. "Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities" Conservation	Opposing view #46: *"Roads are a widespread and increasing feature of most landscapes. We reviewed the scientific literature on the ecological effects of roads and found support for the general conclusion that they are associated with negative effects on biotic integrity in both terrestrial and aquatic ecosystems. Roads of all kinds have seven general effects:*

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Biology, Volume 14, No. 1, Pages 18–30, February 2000	*mortality from road construction, mortality from collision with vehicles, modification of animal behavior, alteration of the physical environment, alteration of the chemical environment, spread of exotics, and increased use of areas by humans. Road construction kills sessile and slow-moving organisms, injures organisms adjacent to a road, and alters physical conditions beneath a road. Vehicle collisions affect the demography of many species, both vertebrates and invertebrates; mitigation measures to reduce road kill have been only partly successful. Roads alter animal behavior by causing changes in home ranges, movement, reproductive success, escape response, and physiological state. Roads change soil density, temperature, soil water content, light levels, dust, surface waters, patterns of runoff, and sedimentation, as well as adding heavy metals (especially lead), salts, organic molecules, ozone, and nutrients to roadside environments. Roads promote the dispersal of exotic species by altering habitats, stressing native species, and providing movement corridors. Roads also promote increased hunting, fishing, passive harassment of animals, and landscape modifications. Not all species and ecosystems are equally affected by roads, but overall the presence of roads is highly correlated with changes in species composition, population sizes, and hydrologic and geomorphic processes that shape aquatic and riparian systems. More experimental research is needed to complement post-hoc correlative studies. Our review underscores the importance to conservation of avoiding construction of new roads in roadless or sparsely roaded areas and of removal or restoration of existing roads to benefit both terrestrial and aquatic biota."* **FS Response:** The citation is a general synthesis of some of the deleterious effects of roads on the natural environment. It is very broad-based and while some of it pertains to conditions in the project area, it contains no specific information that can be used in the analysis. The EIS recognizes some of these effects and, in the case of aquatics, attempts to reduce the sediment-related effects project area roads have on stream channels by implementing best management practices. This opposing view is of the same nature and scope as previous opposing views found above. The concepts discussed in the opposing view are all well understood by the ID Team and were considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS.
Watson, Mark L. "Habitat Fragmentation and the Effects of Roads on Wildlife and Habitats." Background and Literature Review 2005.	Opposing view #47: *"Roads are a major contributor to habitat fragmentation because they divide large landscapes into smaller patches and convert interior habitat into edge habitat. As additional road construction and timber harvest activities increase habitat fragmentation across large areas, the populations of some species may become isolated, increasing the risk of local extirpations or extinctions (Noss and Cooperrider 1994)."* *"Habitat fragmentation creates landscapes made of altered habitats or developed areas fundamentally different from those shaped by natural disturbances that species have adapted to over evolutionary time (Noss and Cooperrider 1994 in Meffe et al. 1997). Adverse effects of habitat fragmentation to both wildlife populations and species include:*

Author/Date/Title	Letter 8, Attachment #4 Response to literature cited in opposing views
	"Increased isolation of populations or species, which leads to: • *Adverse genetic effects; i.e. inbreeding depression (depressed fertility and fecundity, increased natal mortality) and decreased genetic diversity from genetic drift and bottlenecks,* • *Increased potential for extirpation of localized populations or extinction of narrowly distributed species from catastrophic events such as hurricanes, wildfires or disease outbreaks,* • *Changes in habitat vegetative composition, often to weedy and invasive species,* • *Changes in the type and quality of the food base,* • *Changes in microclimates by altering temperature and moisture regimes,* • *Changes in flows of energy and nutrients,* • *Changes in the availability of cover and increases edge effect, bringing together species that might otherwise not interact, potentially increasing rates of predation, competition and nest parasitism, and* • *Increased opportunities for exploitation by humans, such as poaching or illegal collection for the pet trade."* **FS Response:** This paper includes a list of potential effects of roads and highways. It also includes an appendix with a literature review of road effects to wildlife and habitats, with the literature cited following it. The quoted section above lists potential effects of roads. It is recognized that lower-standard, unpaved forest roads have potential effects. The effects of forest fragmentation on wildlife are addressed in the response to opposing views #1, #3, #38, and #46; as well as the response to comment #11 in attachment #1.
Wisdom, Michael J., Richard S. Holthausen Ph.D. Barbara C. Wales Ph.D., Christina D. Hargis Ph.D. Victoria A. Saab Ph.D., Danny C. Lee Ph.D. Wendel J. Hann Ph.D. Terrell D. Rich, Mary M. Rowland, Wally J. Murphy, and Michelle R. Eames "Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-Scale Trends and Management Implications Volume 2 – Group Level Results." USDA Forest Service, PNW-GTR-485, May 2000.	Opposing view #48: *"Our analysis also indicated that >70 percent of the 91 species are affected negatively by one or more factors associated with roads."* *"Roads in forested areas increase trapping pressures for martens and fishers, resulting in significantly higher captures in roaded versus unroaded areas (Hodgman and others 1994) and in logged versus unlogged areas, in which the difference was again attributed to higher road densities in logged stands (Thompson 1994). Secondary roads also might increase the likelihood that snags and logs will be removed for fuel wood. This could impact fishers, martens and flammulated owls, and also could have a negative effect on the prey base for goshawks (Reynolds and others 1992)."* *"An additional, indirect effect of roads is that road avoidance leads to underutilization of habitats that are otherwise high quality."* **FS Response:** This large multi-agency effort defined habitat requirements and assessed trends in these habitats for terrestrial vertebrates across 145 million acres of public and private lands. They also summarized knowledge about species-road relationships, and described the results in relation to broad-scale patterns of road density. The potential effect of roads on wildlife species is discussed throughout the wildlife section in chapter 3 of the FEIS.

Author/Date/Title	Letter 8, Attachment #4 Response to literature cited in opposing views
Wright, Bronwen, Policy Analyst and Attorney Pacific Rivers Council Excerpt from a May 11, 2009 letter to the Rogue River-Siskiyou National Forest Travel Management Team	Opposing view #49: *"According to the DEIS, the Forest now manages a total of 5,914 miles of roads across the Forest. Scientific literature has established that roads have numerous widespread, pervasive and, if left untreated, long-lasting biological and physical impacts on aquatic ecosystems that continue long after completion of construction. (Angermeier et al. 2004). Roads increase surface water flow, alter runoff patterns, alter streamflow patterns and hydrology, and increase sedimentation and turbidity. Roads are the main source of sediment to water bodies from forestry operations in the United States. (US EPA 2002). Road construction can lead to slope failures, mass wasting and gully erosion. Road crossings can act as barriers to movement for fish and other aquatic organisms, disrupting migration and reducing population viability. (Schlosser and Angermeier 1995). Chemical pollutants that enter streams via runoff, such as salt and lead from road use and management, compound these impacts. Most of these adverse effects are persistent and will not recover or reverse without human intervention. The techniques for road remediation are well established, agreed upon and readily available. (Weaver et al. 2006)." (Pg. 2)* **FS Response:** The citation is a comment letter to the Forest Service on travel management in the Oregon Cascade Mountains, which is a very different climate and setting than the northern Rockies. The letter cites other literature that discusses the adverse effects of roads on aquatic environments. This opposing view is of the same nature and scope as previous opposing views found above. The concepts discussed in the opposing view are all well understood by the ID Team and were considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS.
Wuerthner, George 2008 "Ecological Differences between Logging and Wildfire" http://wuerthner.blogspot.com/2008/12/ecological-differences-between-logging.html	Opposing view #50: *"Fires do not leave a large road network in place (assuming the blaze was not suppressed otherwise there may be dozer lines, etc.). Logging creates roads that fragment habitat and generally increase human access, both of which affect the use of the land by wildlife. Moreover, roads and logging equipment can become vectors for the dispersal of weeds."* **FS Response:** The cited article is an opinion piece that discusses the ecological differences between logging and wildland fire. The article presents wildland fire as a beneficial force and logging as a source of deleterious impacts on the forests. The article describes the ecosystem functions performed by fire and lists potential road-related impacts associated with logging, including habitat fragmentation, human access, disturbance, habitat avoidance (grizzly bears), hunting, poaching, and roads as vectors for invasive weeds. This opposing view is of the same nature and scope as previous opposing views found above. The concepts discussed in the opposing view are all well understood by the ID Team and were considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS. Please see response to opposing views #1 and #36.

Author/Date/Title	Letter 8, Attachment #4 Response to literature cited in opposing views
Zimmerman, E.A. and P.F. Wilbur "A Forest Divided" New Roxbury Land Trust newsletter, 2004	Opposing view #51: *"Forest fragmentation occurs when large, contiguous blocks of forest are broken up into isolated islands by development, roads, or clearing for agriculture. Just as inbreeding among the royal families of Europe spread hemophilia, forest fragmentation negatively impacts the long term sustainability of both plant and animal communities. Geographic isolation results in inbreeding and diminishes biodiversity."* **FS Response:** The cited article broadly discusses the potential causes of forest fragmentation, including road-related impacts, impacts to human health, and economic impacts. The article lists the following road-related impacts: habitat fragmentation, inbreeding and diminished biodiversity stemming from isolation of populations, road kill, and increased predation of woodland birds. This opposing view is of the same nature and scope as previous opposing views found above. The concepts discussed in the opposing view are all well understood by the ID Team and were considered in the environmental effects analysis in the resource sections of Chapter 3 of the EIS. Please see response to opposing views #1 and #36.

Telegraph Vegetation Project
Review of References Cited in Comments to the Environmental Impact Statement

Attachment #9a
Dick Artley
(Herbicides Containing Glyphosate should Never be Applied to Areas where Mammals (including humans), Fish, or Birds Might be Present

Research shows Even Casual Contact with the Chemical Causes Serious Health Problems)

FS Response: In review of the literature found in attachment 9a, also shown in the left hand column, we have concluded that this attachment has no bearing on the current project, and was therefore dismissed from further review. There is no proposal to apply herbicides with this project; only design measures (i.e., cleaning of equipment) to reduce the spread of weeds. Any spraying for weeds would be covered under the Helena National Forest Noxious Weed Treatment Project EIS (2006).

Author/Date/Title	Letter 8, Attachment #9a Response to literature cited in opposing views
Howe, Christina Ph.D., Michael Berrill Ph.D., and Bruce D. Pauli 2001 "The Acute and Chronic Toxicity of Glyphosate-Based Pesticides in Northern Leopard Frogs"	Opposing View #1: *"Chronic Effects of Glyphosate versus Formulations: Throughout this study glyphosate itself showed no chronic effects on developing tadpoles. The tadpoles reared in the formulations Roundup Original® and Transorb® did show significant physical abnormalities. Abnormalities were also found upon exposure to the surfactant POEA. For all endpoints POEA showed practically identical results to the Roundup Original® formulation whereas the same cannot be said for the Transorb® formulation. The surfactant used in the Transorb formulation is not known (being protected as "Trade Secret"), but has been described as a "surfactant blend". This "surfactant blend" may be responsible for inhibition of metamorphosis, as well as the skewed sex ratio towards female seen in the present study.* *Developmental abnormalities induced by Roundup are likely a result of endocrine disruption. The thyroid axis can be greatly affected by corticoids and sex steroids which influence hypothalamic and pituitary control (See Dodd and Dodd, 1976, and Hayes, 1997 for review). Corticoids, sex steroids and prolactin have caused delayed metamorphosis and decreased size by both antagonizing and inhibiting thyroid action (Hayes, 1997). Sex steroid can induced sex reversal and intersex in amphibians and mammals, while low thyroid levels interfere with vitellogenesis. A concentration _at which the animals were not effected (NOEC) by The Roundup formulations was not determined by this study.*

Author/Date/Title	Letter 8, Attachment #9a Response to literature cited in opposing views
	FS Response: There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Lang, Chris "Glyphosate herbicide, the poison from the skies" WRM's bulletin N° 97, August 2005	Opposing View #2: *"After spraying, glyphosate herbicides can remain in soils for long periods. The herbicide can drift onto neighbouring fields, streams or hedges. Roundup kills beneficial insects. It wipes out habitat for birds and animals. Glyphosate causes genetic damage to fish. It is "extremely lethal to amphibians", according to assistant professor of biology Rick Relyea at the University of Pittsburgh. It is hazardous to earthworms. Glyphosate reduces nitrogen fixation. Roundup reduces the growth of mycorrhizal fungi. Roundup can increase the spread and severity of plant diseases (see WRM Bulletin no. 18)."* *"Glyphosate herbicides can have a range of impacts on human health, including genetic damage, skin tumours, thyroid damage, anaemia, headaches, nose bleeds, dizziness, tiredness, nausea, eye and skin irritation, asthma and breathing difficulties. Several studies have indicated a link between glyphosate herbicides and non-Hodgkin's lymphoma, a type of cancer."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Projects.
Leu, Andre "Monsanto's Toxic Herbicide Glyphosate: A Review of its Health and Environmental Effects" Organic Producers Association of Queensland, May 15, 2007	Opposing View #3: *"In California, where there is a mandatory system of reporting pesticide poisoning, Glyphosate is the third most common cause of pesticide illness in farm workers. It is the most common form of reported pesticide poisoning in landscape gardeners."* *"Two separate studies in Sweden have linked exposure to Glyphosate to Hairy Cell Leukemia and Non Hodgkins Lymphoma. These types of cancers were extremely rare, however non-Hodgkins lymphoma is the most rapidly*

Author/Date/Title	Letter 8, Attachment #9a Response to literature cited in opposing views
	increasing cancer in the Western world. It has risen by 73°/o in the USA since 1973. Another study has found a higher incidence of Parkinson disease amongst farmers who used herbicides, including glyphosate." *"Other studies show that Glyphosate and commercial herbicides containing Glyphosate cause a range of cell mutations and damage to cell DNA. These types of changes are usually regarded as precursors to cancer and birth defects."* *"Studies show that exposure to Glyphosate is associated with a range of reproductive effects in humans and other species. Research from Ontario, Canada found that a father's exposure to Glyphosate was linked to an increase in miscarriages and premature births in farm families."* *"Glyphosate caused a decrease in the sperm count of rats and an increase in abnormal and dead sperms in rabbits. Pregnant rabbits exposed to Glyphosate had a decrease in the weight of their babies."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Long, Cheryl. "Hazards of the World's Most Common Herbicide" Mother Earth News, October/November 2005	Opposing View #4: *"Symptoms of exposure to glyphosate include eye irritation, blurred vision, skin rashes, burning or itchy skin, nausea, sore throat and difficulty breathing, headache, lethargy, nose bleeds and dizziness.* *In lab tests, glyphosate and herbicides containing glyphosate caused genetic damage to human and animal cells.* *Studies of farmers and other people exposed to glyphosate herbicides link this exposure to increased risks of cancer, miscarriages and attention deficit disorder. Additional laboratory tests have confirmed the results of these studies.* *Laboratory evidence indicates that glyphosate herbicides can reduce production of sex hormones.* *Studies of glyphosate contamination of water are limited, but new results indicate that it can easily contaminate streams in both agricultural and urban areas.* *Glyphosate herbicides cause more off-target damage incidents than all but one other herbicide - 2, 4-D.*

Author/Date/Title	Letter 8, Attachment #9a Response to literature cited in opposing views
	Glyphosate herbicides cause genetic damage and harm to the immune system in fish. In frogs, glyphosate herbicides cause genetic damage and abnormal development." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Martin, Negin P. Ph. D. "Monsanto's Roundup More Deadly to Liver Cells than Glyphosate Alone" Organic Consumers Assn., August 18, 2009	Opposing View #5: *"Very low doses of some types of the herbicide Roundup can endocrine disruptor the formulations' toxicity may be tied to their "inactive" ingredients rather than the active weed-killing ingredient glyphosate.* *French scientists report that a number of Roundup formulations tested at very dilute concentrations can alter hormone actions and cause human liver cells to die within 24 hours of treatment.* *The toxicity of some of the formulations was independent of how much glyphosate - the active herbicide in Roundup - they contained, suggesting it is other "inert" ingredients that may alone - or in combination with each other and/or the weed killer - assault the cells. This study's results are similar to prior studies - as reported in a recent Environmental Health News article - that find human embryo cells are affected more by the Roundup formulations and an inert ingredient than by the active ingredient.* *The levels of Roundup used in this study are similar to what is typically found in food crops or animal feed treated with Roundup. Because of this, it is possible that people, livestock and wildlife may be exposed to levels of the herbicide mix that can damage cells."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.

Author/Date/Title	Letter 8, Attachment #9a Response to literature cited in opposing views
Reno, Jamie, "BREAKING NEWS: America's Favorite Weed Killer Linked to Cancer" Reno Dispatch, July 1, 2013	Opposing View #6: "It's shameful how few American media outlets have written about the latest scientific studies linking Roundup, the world's most popular and profitable weed killer, and cancer. Might it be because Monsanto, makers of Roundup and as we all know a generally bad corporate citizen with a litany of alleged crimes against humanity, spends billions in advertising and marketing and dedicates a good portion of that budget to- print and television ads? Monsanto spent $1.28 billion on its various marketing programs in fiscal 2012, according to the company's annual report. All that money seems to have had an impact. I am only speculating, of course. But why else would the American media ignore the mounting evidence of links between Roundup and cancer? The latest is a groundbreaking study showing that the active ingredient in the hugely popular herbicide fuels breast cancer by increasing the number of breast cancer cells through cell growth and cell division. This should be front-page news." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Reed, Genna "New Review Points to Glyphosate's Dangerous Health Effects" Food & Water Watch, April 30, 2013	Opposing View #7: *"A new review of hundreds of scientific studies surrounding glyphosate-the major component of Monsanto's Roundup herbicide- sheds light on its effects within the human body. The paper describes how all of these effects could work together, and with other variables, trigger health problems in humans, including debilitating diseases like gastrointestinal disorders, diabetes, heart disease, obesity and Alzheimer's disease.·* *Glyphosate impairs the cytochrome P450 (CYP) gene pathway, which creates enzymes that help to form and also break down molecules in cells. There are myriad important CYP enzymes, including aromatase (the enzyme that converts androgen 'into estrogen) and 21-Hydroxylase, which creates cortisol (stress hormone) and aldosterone (regulates blood pressure). One function of these CYP enzymes is also to detoxify xenobiotics, which are foreign chemicals like drugs, carcinogens or*

Author/Date/Title	Letter 8, Attachment #9a Response to literature cited in opposing views
	pesticides. Glyphosate inhibits these CYP enzymes, which has rippling effects throughout our body. *Because the CYP pathway is essential for normal functioning of various systems in our bodies, any small change in its expression can lead to disruptions. For example, humans exposed to glyphosate have decreased levels of the amino acid tryptophan, which is necessary for active signaling of the neurotransmitter serotonin. Suppressed serotonin levels have been associated with weight gain, depression, and Alzheimer's disease.* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Ho, Mae Wan Ph.D. "Glyphosate and Cancer" The Institute of Science in Society, Report 26, March 2014	Opposing View #8: *"The carcinogenic potential of glyphosate has been known since the 1980s. An excellent review on glyphosate toxicity written by Caroline Cox of Northwest Coalition for Alternatives to Pesticides, Eugene, Oregon in the US published in 1995 showed that most if not all the toxic effects of glyphosate had already been demonstrated in laboratory studies [7]. Glyphosate was not only acutely toxic to animals and human beings; subchronic studies showed that feeding glyphosate to animals for three months caused "reduced weight gain, diarrhea, and salivary gland lesion." Lifetime feeding caused "excess growth and death of liver cells, cataracts and lens degeneration, and increase in the frequency of thyroid, pancreas and liver tumors." Also documented were effects on fertility: reduced sperm counts in males and lengthening of the oestrus cycle in females.* *But the public were kept in the dark through a litany of outright fraud committed by testing companies working for the corporations, deception, and half-truths.* *On carcinogenicity, Cox wrote [8]: "The potential of glyphosate to cause cancer has been a controversial subject since the first lifetime feeding studies were analyzed in the early 1980s. The first study (1979-1981) found an increase in testicular interstitial tumors in male rats at the highest dose tested (30 mg/kg of body weight per day) [9], as well as an increase in the frequency of a thyroid cancer in females [1O]. The second study (completed in 1983) found dose-related increases in the frequency of a rare kidney tumor in male mice [11]. The most recent study (1988-1990) found an increase in the*

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	number of pancreas and liver tumors in male rats together with an increase of the same thyroid cancer found in the 1983 study in females [12]. *But the US Environment Protection Agency (EPA) explained all that away. Cox continued [8]: "All of these increases in tumor incidence are "not considered compound-related" [12] according to EPA. In each case,different reasons are given for this conclusion. For the testicular tumors, EPA accepted the interpretation of an industry pathologist who said that the incidence in treated groups (12 percent) was similar to those observed in other control (not glyphosate-fed) rat feeding studies (4.5 percent) [13].* *[This is a blatant, illicit use of controls.] For the thyroid cancer, EPA stated that it was not possible to consistently distinguish between cancers and tumors of this type, so that the incidences of the two should be considered together [a questionable manipulation of data]. The combined data are not statistically significant [1O]. For the kidney tumors, the registrants reexamined slides of kidney tissue, finding an additional tumor in untreated mice so that statistical significance was lost. This was despite a memo from EPA's pathologist stating that the lesion in question was not really a tumor [11] [and hence amounts to a falsification of data]. For the pancreatic tumors, EPA stated that there was no dose-related trend and no progression to malignancy [this is frequently the case in endocrine disrupting chemicals]. For the liver tumors and the thyroid tumors, EPA stated that pairwise comparisons between treated and untreated animals were not statistically significant and there was no progression to malignancy [12]." (Comments between square brackets added).* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Prasad, Sahdeo, Ph.D., Smita Srivastava Ph.D., Madhulika Singh Ph.D., and Yogeshwer Shukla Ph.D. "Clastogenic Effects of Glyphosate in Bone Marrow Cells of Swiss Albino Mice" *Journal of Toxicology*, December 15, 2008	Opposing View #9: *"Pesticides, including herbicides, insecticides, and fungicides are used extensively to improve crop yields and as a result, they accumulate in the environment and humans unavoidably exposed to them [1]. Pesticides tend to be very reactive compounds that can form covalent bonds with various nucleophilic centers of cellular biomolecules, including DNA [2-4]. Because of*

Author/Date/Title	Letter 8, Attachment #9a Response to literature cited in opposing views
	their biological activity, the indiscriminate use of pesticides may cause undesired effects to human health. For instance, the induction of DNA damage can potentially lead to adverse reproductive outcomes, the induction of cancer, and many other chronic diseases [5-8]. Epidemiological studies demonstrated that occupational exposure to some pesticides may be related to several kinds of cancer, including leukemia [9], bladder [1O], and pancreatic cancers [11]." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Hoffmann, Karen, "Roundup® highly lethal to amphibians, finds University of Pittsburgh researcher" University of Pittsburgh News Services, March 31, 2005	Opposing View #10*: "PITTSBURGH--The herbicide Roundup® is widely used to eradicate weeds.But a study published today by a University of Pittsburgh researcher finds that the chemical may be eradicating much more than that.* *Pitt assistant professor of biology Rick Relyea found that Roundup®, the second most commonly applied herbicide in the United States, is "extremely lethal" to amphibians. This field experiment is one of the most extensive studies on the effects of pesticides on nontarget organisms in a natural setting, and the results may provide a key link to global amphibian declines.* *In a paper titled "The Impact of Insecticides and Herbicides on the Biodiversity and Productivity of Aquatic Communities," published in the journal Ecological Applications, Relyea examined how a pond's entire community--25 species, including crustaceans, insects, snails, and tadpoles--responded to the addition of the manufacturers' recommended doses of two insecticides--Sevin® (carbaryl) and malathion--and two herbicides--Roundup® (glyphosate) and 2,4-D.* *Relyea found that Roundup® caused a 70 percent decline in amphibian biodiversity and an 86 percent decline in the total mass of tadpoles.* *Leopard frog tadpoles and gray tree frog tadpoles were completely eliminated and wood frog tadpoles and toad tadpoles were nearly eliminated. One species of frog, spring peepers, was unaffected."*

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	FS Response: There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Relyea, Rick A. Ph.D. and Devin K. Jones "The Toxicity of Roundup Original Max to 13 Species of Larval Amphibians" Environmental Toxicology and Chemistry, Vol. 28, No. 9, pp. 2004-2008, 2009	Opposing View #11: *"For all nine species of larval anurans, the Kruskal-Wallis analyses detected significant effects of pesticide concentration on mortality (p # 0.002; Fig. 1). The subsequent mean comparisons, using Dunnett's tests, indicated the lowest concentrations that caused significantly greater mortality than the control (p, 0.05). For two species (bullfrogs and spring peepers), 1 mg a.e./L of glyphosate caused significantly greater mortality than the control. For the remaining seven species (green frogs, leopard frogs, wood frogs,* *Cascades frogs, American toads, western toads, and gray tree frogs), 2 mg a.e./L of glyphosate was the lowest concentration to cause significantly greater mortality than the control. Based on the probit analyses, the estimated LC5096-h values for the nine species of larval anurans ranged from 0.8 to 2.0 mg a.e./L (Table 2)."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"Rethinking Roundup" Pesticide Action Network North America (PANNA) Update, August 5, 2005	Opposing View #12 - *"A recent study of Roundup presents new evidence that the glyphosate-based herbicide is far more toxic than the active ingredient alone. The study, published in the June 2005 issue of Environmental Health Perspectives, reports glyphosate toxicity to human placental cells within hours of exposure, at levels ten times lower than those found in agricultural use. The researchers also tested glyphosate and Roundup at lower concentrations for effects on sexual hormones, reporting effects at very low levels. This suggests that dilution with other ingredients in Roundup may, in fact, facilitate glyphosate's hormonal impacts."*

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	"The evidence presented in the recent study is supported by earlier laboratory studies connecting glyphosate with reproductive harm, including damaged DNA in mice and abnormal chromosomes in human blood. *Evidence from epidemiological studies has also linked exposure to the herbicide with increased risk of non-Hodgkin's lymphoma, and laboratory studies have now begun to hone in on the mechanism by which the chemical acts on cell division to cause cancer. A Canadian study has linked glyphosate exposure in the three months before conception with increased risk for miscarriage and a 2002 study in Minnesota connected glyphosate exposure in farm families with increased incidence of attention deficit disorder."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Richard, Sophie Ph.D., Safa Moslemi Ph.D., Herbert Sipahutar, Nora Benachour and Gilles-Eric Seralini Ph.D., 2005 "Differential effects of glyphosate and Roundup on human placental cells and aromatase" Mindfully.erg	Opposing View #13: *"Our studies show that glyphosate acts as a disruptor of mammalian cytochrome P450 aromatase activity from concentrations 100 times lower than the recommended use in agriculture, and this is noticeable on human placental cells after only 18 hr, and it can also affect aromatase gene expression. It also partially disrupts the ubiquitous reductase activity but at higher concentrations. Its effects are allowed and amplified by at least 0.02% of the adjuvants present in Roundup, known to facilitate cell penetration, and this should be carefully taken into account in pesticide evaluation. The dilution of glyphosate in Roundup formulation may multiply its endocrine effect. Roundup may be thus considered as a potential endocrine disruptor. Moreover, at higher doses still below the classical agricultural dilutions, its toxicity on placental cells could favor some reproduction problems."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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"Swedish study shows links between glyphosate and cancer" The European NGO Network on Genetic Engineering, 1999	Opposing View #14: *"There are serious health implications from the use of this pesticide. There is a long list of reported toxic effects from glyphosate exposure and this Swedish study provides compelling evidence of the links between glyphosate and cancer."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Govindarajulu, Purnima P. Ph.D. "Literature review of impacts of glyphosate herbicide on amphibians: What risks can the silvicultural use of this herbicide pose for amphibians in B.C.?" British Columbia Ministry of Environment, Wildlife Report No. R-28, June 2008	Opposing View #15: *"This review suggests that the silvicultural use of glyphosate needs to be re-evaluated with respect to non- target impacts on amphibians in B.C. In addition, knowledge gaps hinder effective and realistic assessment of these impacts. Glyphosate impacts can be species-specific in amphibians, but acute toxicity values are known for only two native B.C. amphibians (the Wood Frog, Rana sy/vatica, and the Leopard Frog, R. pipiens). The impact of glyphosate herbicides on salamander species and on terrestrial stages of amphibians is not well understood. There is insufficient information on the levels of glyphosate contamination in small ephemeral wetlands, which are favoured habitats of amphibians, and which may be exposed to direct overspraying with herbicide under current use guidelines. Although the surfactant in glyphosate herbicides, POEA, has been identified as potentially the primary ingredient causing toxicity to amphibians, the option of using surfactants of lower toxicity has not been assessed. These knowledge gaps need to be addressed so that best management practices can be developed to minimize non-target impacts on amphibians from the use of glyphosate herbicides in forestry." (Pg. iii)* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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Affidavit submitted by Mae-Wan Ho Ph.D. , August 12, 1998	Opposing View #16: "*E. Wider ecological concerns of the genetically engineered soya beans* 1. *Glyphosate is a broad-spectrum herbicide which will have major impacts on biodiversity (see Greenpeace Report, 1998, and references therein). It kills all plants indiscriminately. This will destroy wild plants as well as insects, birds, mammals and other animals that depend on the plants for food and shelter. In addition, Roundup (Monsanto's formulation of glyphosate) can be highly toxic to fish. Glyphosate also harms earthworms and many beneficial mycorrhizal fungi and other microorganisms that are involved in nutrient recycling in the soil. It is so generally toxic that researchers are even investigating its potential as an antimicrobial (Roberts et al, 1998)."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Huber, Don Ph.D., Monsanto's Glyphosate: Impacts on Human Health and Plant Life Organic Consumers Assn. and Global Research, June 14, 2010	Opposing View #17: *"I have been doing research on glyphosate for 20 years. I began noticing problems when I saw a consistent increase in "take-all" (a fungal disease that impacts wheat) where glyphosate had been applied in a previous year for weed control. I tried to understand why there was an increase in disease with glyphosate."* *"The widespread use of glyphosate is causing negative impacts on soil and plants as well as possibly animal and human health."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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"Toxicity of Glyphosate" Natural Communities magazine, July 16th, 2009	Opposing View #18: *"A recently published study by Italian researchers [3] examined the toxicity of four popular glyphosate based herbicide formulations on human placental cells, kidney cells, embryonic cells and neonate umbilical cord cells and surprisingly found total cell death of each of these cells within 24 hours. The researchers reported several mechanisms by which the herbicides caused the cells to die including: cell membrane rupture and damage, mitochondrial damage and cell asphyxia. Following these findings, the researchers tested G, AMPA and POEA by themselves and concluded that, 'It is very clear that if G, POEA, or AMPA has a small toxic effect on embryonic cells alone at low levels, the combination of two of them at the same final concentration is significantly 'deleterious'.* *Although previous researchers have proposed that the supposed 'inert ingredients' alter the role of cell membrane disruptors in fish, amphibians, microorganisms [4] and plants [5], independent of G, this study is the first of its kind to report similar findings in human cells. The researchers concluded that, "the proprietary mixtures available on the market could cause cell damage and even death around residual levels to be expected, especially in food and feed derived from R [Roundup] formulation-treated crops" which are pervasive in GM-soya."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Trigona, Marie "Study Released in Argentina Puts Glyphosate Under Fire" Znet, July 28, 2009	Opposing View #19: *"A study released by an Argentine scientist earlier this year reports that glyphosate, patented by Monsanto under the name "Round Up," causes birth defects when applied in doses much lower than what is commonly used in soy fields.* *The study was directed by a leading embryologist, Dr. Andres Carrasco, a professor and researcher at the University of Buenos Aires. In his office in the nation's top medical school, Dr. Carrasco shows me the results of the study, pulling out photos of birth defects in the embryos of frog amphibians exposed to glyphosate. The frog embryos grown in petri dishes in the photos looked like something*

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	from a futuristic horror film, creatures with visible defects-one eye the size of the head, spinal cord deformations, and kidneys that are not fully developed." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Vinje, Eric, "Chemical Quandary: The Problem with Pesticides, Herbicides and Chemical Fertilizer" Planet Natural	Opposing View #20*: "Controversy exists around the use of herbicides more commonly used by home gardeners, such as, 2, 4- D and Roundup. A manufacturer supported review of studies found Roundup safe for use around humans while anti-herbicide groups cite studies that find it affecting human embryonic, placental, and umbilical cells in vitro as well as testosterone development in mice."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Weber, Jude and Hal Weitzman "Argentina Pressed to Ban Crop Chemical" The Financial Times, UK, May 29, 2009	Opposing View #21: *"According to Mr. Carrasco's research, even tiny quantities of glyphosate could cause embryonic malformations in frogs and thus, by extrapolation, may have implications for humans.* *"I suspect the toxicity classification of glyphosate is too low ... in some cases this can be a powerful poison," Mr Carrasco told the Financial Times in an interview. He says residents near soya-producing areas began reporting problems from 2002, a couple of years after the first big harvests using genetically modified seeds, which were approved for use in Argentina in 1996.* *Research by other Argentine scientists and evidence from local campaigners has indicated a high incidence of birth defects and cancers in people living near crop-spraying areas. One study conducted by a doctor, Rodolfo Paramo, in the northern farming province of Santa Fe reported 12*

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	malformations per 250 births, well above the normal rate." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Wikipedia, the free encyclopedia, April 10, 2010	Opposing View #22: *"Fish and aquatic invertebrates are more sensitive to Roundup than terrestrial organisms. Glyphosate is generally less persistent in water than in soil, with 12 to 60 day persistence observed in Canadian pond water, yet persistence of over a year have been observed in the sediments of ponds in Michigan and Oregon."* *"The EU classifies Roundup as R51153 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.* *"Although Roundup is not registered for aquatic uses and studies of its effects on amphibians indicate it is toxic to them scientists have found that it may wind up in small wetlands where tadpoles live, due to inadvertent spraying during its application. A recent study found that even at concentrations one-third of the maximum concentrations expected in nature, Roundup still killed up to 71 percent of tadpoles raised in outdoor tanks."* *"In 1996, Monsanto was accused of false and misleading advertising of glyphosate products, prompting a law suit by the New York State attorney general. Monsanto had made claims that its spray-on glyphosate based herbicides, including Roundup, were safer than table salt and "practically non-toxic" to mammals, birds, and fish."* *"Environmental and consumer rights campaigners brought a case in France in 2001 for presenting Roundup as biodegradable and claiming that it left the soil clean after use; glyphosate, Roundup's main ingredient, is classed by the European Union as "dangerous for the environment" and "toxic for aquatic organisms". In January 2007, Monsanto was convicted of false advertising. The result was confirmed in 2009."* *"On two occasions the United States Environmental Protection Agency has caught scientists deliberately falsifying test results at research laboratories hired by Monsanto to study glyphosate. In the first incident involving Industrial Biotest Laboratories, an EPA*

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	reviewer stated after finding "routine falsification of data" that it was "hard to believe the scientific integrity of the studies when they said they took specimens of the uterus from male rabbits". In the second incident of falsifying test results in 1991, the owner of the lab (Craven Labs), and three employees were indicted on 20 felony counts, the owner was sentenced to 5 years in prison and fined 50,000 dollars, the lab was fined 15.5 million dollars and ordered to pay 3.7 million dollars in restitution. Craven laboratories performed studies for 262 pesticide companies including Monsanto." *"Monsanto has stated that the studies have been repeated, and that Roundup's EPA certification does not now use any studies from Craven Labs or IBT. Monsanto also said that the Craven Labs investigation was started by the EPA after a pesticide industry task force discovered irregularities."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
New Study Links Monsanto's Roundup to Cancer Organic Consumers Assn., June 22, 1999	Opposing View #23*: "A recent study by eminent oncologists Dr. Lennart Hardell and Dr. Mikael Eriksson of Sweden [1], has revealed clear links between one of the world's biggest selling herbicide, glyphosate, to non-Hodgkin's lymphoma, a form of cancer [2].* *In the study published in the 15 March 1999 Journal of American Cancer Society, the researchers also maintain that exposure to glyphosate 'yielded increased risks for NHL.' They stress that with the rapidly increasing use of glyphosate since the time the study was carried out, 'glyphosate deserves further epidemiologic studies.' "* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.

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Ho Mae-Win Ph.D. and Brett Cherry "Death by Multiple Poisoning, Glyphosate and Roundup" an Institute of Science in Society news release submitted to the USDA November 2, 2009	Opposing View #24 - *"These latest studies confirm a wealth of evidence on the toxicities of glyphosate and Roundup formulations [2] (Glyphosate Toxic & Roundup Worse, SiS 26), and pinpoint the different sites of action, all of which result in cell death.* *Epidemiological studies have previously linked glyphosate to spontaneous abortions, non-Hodgkin lymphoma, and multiple myeloma. Laboratory studies showed that glyphosate inhibits transcription in sea urchin eggs and delays development. Brief exposures to glyphosate in rats caused liver damage, and adding the surfactant in Roundup had a synergistic effect, causing greater liver damage. Roundup was also found to be much more lethal to frogs than to weeds, and could have contributed to the global demise of amphibians within the past decades,"* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Watts, Meriel and Ronald Macfarlane, "Glyphosate" A Pesticide Action Network - Asia and the Pacific publication, 1999	Opposing View #25: *"Terrestrial toxicity: A number of species of birds, mammals and beneficial insects suffer population loses through habitat and/or food supply destruction resulting from the use of glyphosate. There are also direct lethal and sublethal effects.* *- Birds LOSO (mg/kg body weight) >3851* *- Beneficial Insects oral LOSO >100ug/bee. (Cox 1995b; /PCS 1994)* *Exposure to freshly applied Roundup killed more than half of three species - a parasitoid wasp, a lacewing, and a ladybug - and more than 80 percent of a predatory beetle. Carabid beetle populations have shown significant decline and slow recovery after glyphosate application (Asterarki et al., 1992; Brust, 1990; Hassan 1988)* *Glyphosate adversely affects a number of soil and plant fauna, such as the beneficial predatory mites. However, it prolonged larval survival of the foliar-feeding nematode Nothanguinea by 50% thus increasing the damage done by this pest. (Carlisle & Trevore, 1987; Eijsackers 1985)* *Glyphosate may inhibit a number of fungi that decompose dead plant material. Roundup applied to the soil in repeated doses had a substantial adverse effect on the*

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	growth rate of earthworms. The reproductive capacity and the total population in the soil could be expected to fall following repeated low doses of biocides. IPCS, however, classifies glyphosate as having low toxicity to earthworms with a No Observed Effects Concentration of 158mg/kg. (Grossbard 1985; /PCS, 1994; Springett and Gray, 1992) *Laboratory studies show significant effects on nitrogen fixation, denitrification and nitrification. (/PCS 1994)* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Broek, Hans van den, "Glyphosate kills bees" The Institute of Science in Society Science in Society #38, summer 2008	Opposing View #26: *"Regarding your article, Mystery of Disappearing Honeybees (SiS 34), I am a Dutch beekeeper in the east of the Netherlands near Germany, and we see the same problem with bees, as in Belgium, Germany, France and the whole of Europe. In the Netherlands the government is set to give permission for growing GMOs, even in such a very small country. It will cause a lot of damage: bad for biodiversity, the earth, water, air, drinking water and food.* *I just lost 68 percent of my bees, and I blame the city workers who sprayed glyphosate twice at the end of October last year. My beehives were 4 metres from the spray, whereas the legal distance is 200 metres. By the beginning of January 2008, the bees started to die. The municipal authorities in villages and small cities spray glyphosate on weeds in public places, gardens and footpaths. In big cities, they would use steam instead of weed killers.* *I did a 'test' in September 2007 with a bit of glyphosate, and within three or five minutes, the bees were dead. It is very important for the city workers to give people warning when they spray, but they never do.* *We must study the toxic effects of GMOs and glyphosate, for the sake of the next generation, our children, as well as the sick and old people.* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed

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	Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Lang, Chris, "Glyphosate herbicide, the poison from the skies" WRM's bulletin N° 97, August 2005	Opposing View #27: *"Glyphosate herbicides can have a range of impacts on human health, including genetic damage, skin tumours, thyroid damage, anaemia, headaches, nose bleeds, dizziness, tiredness, nausea, eye and skin irritation, asthma and breathing difficulties. Several studies have indicated a link between glyphosate herbicides and non-Hodgkin's lymphoma, a type of cancer.* *Not surprisingly, considering the amount of money that Monsanto makes from sales of glyphosate products, the company plays down the health risks of glyphosate. Monsanto claims that glyphosate herbicides pose only a "low risk to human health" as long as glyphosate is used "according to label directions".* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"chemica/WATCH Factsheet" Published by Beyond Pesticides, August 2009	Opposing View #28: *"A 1999 study, A Case-Control Study of Non-Hodgkin Lymphoma and Exposure to Pesticides, (American Cancer Society, 1999), found that people exposed to glyphosate are 2.7 times more likely to contract non-Hodgkin Lymphoma.* *A Finnish study shows that glyphostate decreases the defenses of enzymes of the liver and intestines.18 RoundUp, as a mixture of all its ingredients, has been shown to shut down a powerful antioxidant in the liver that detoxifies harmful compounds so they can be excreted through bile. A paper published in August 2000 shows that RoundUp alters gene expression and inhibits necessary steroid production by disrupting a particular protein expression. In 2002, a paper shows that RoundUp can also affect early cell division processes in embryos.* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed

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	Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Ludwig, Mike "Farmers Sue USDA Over Monsanto Alfalfa - Again" Axis of Logic, March 25, 2011	Opposing View #29: *"The USDA first deregulated Roundup Ready alfalfa in 2005. Internal emails recently obtained by Truthout show that Monsanto worked closely with regulators to edit its original petition to deregulate the alfalfa. One regulator accepted Monsanto's help in conducting the USDA's original environmental assessment of the alfalfa.* *Farmers and biotech opponents soon filed a lawsuit against the USDA to challenge the initial deregulation. In 2007, a federal court ruled that the USDA did not consider the full environmental impacts of Roundup Ready alfalfa and vacated the agency's decision to deregulate the alfalfa.* *Monsanto and its allies appealed the decision, and last year, the Supreme Court reversed the lower court's rulirig, but ordered the USDA to produce an Environmental Impact Statement (EIS) on the alfalfa before allowing it back into America's fields.* *The USDA released a final EIS on Roundup Ready alfalfa in late 2010, and the GE alfalfa was fully deregulated on January 27. The USDA went on to approve two more GE seeds within weeks of the alfalfa decision.* *Roundup Ready alfalfa was deregulated just weeks after USDA Secretary Tom Vilsack was pressed by Republican Congressmen, some of whom recently received campaign contributions from Monsanto and the biotech industry, to dump a proposal to geographically isolate Roundup Ready alfalfa from organic and conventional alfalfa and, instead, legalize the GE seed without any government oversight.* *The latest lawsuit filed by CFS and its allies argues that the final EIS ignores or downplays the threats Roundup Ready alfalfa poses to conventional alfalfa farms and the environment."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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"Glyphosate disrupts of human hormones" An interview with Professor Gilles-Eric Seralini Ph.D. Published by ecochem	Opposing View #30: *"JH: You said you had found that very low doses of glyphosate had caused these effects on aromatase. Are they the kind of doses that would be used in practical agriculture in the European Union?"* *"GE-S: They are about ten to 100 times less than the doses used by agricultural workers. One has to be cautious because these are in vitro results but we do not want to wait for death when the precautionary principle suggests a need for measures to avoid any harmful effects on fetuses and children."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Roseboro, Ken "Monsanto's Glyphosate Problems: Scientist Warns of Dire Consequences with Widespread Use" The Organic and Non-GMO Report, Posted June 14, 2010	Opposing View #31*: "The December/January 2010 issue of The Organic & Non-GMO Report featured an interview with Robert Kremer, an adjunct professor in the Division of Plant Sciences at the University of Missouri, whose research showed negative environmental impacts caused by glyphosate, the main ingredient in Monsanto's Roundup herbicide, which is used extensively with Roundup Ready genetically modified crops."* *"The widespread use of glyphosate is causing negative impacts on soil and plants as well as possibly animal and human health. These are key findings of Don Huber, emeritus professor of plant pathology, Purdue University."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Ho, Mae-Wan Ph.D. and Prof. Joe Cummins Ph.D. "Glyphosate Toxic & Roundup Worse" An	Opposing View #32: *"There is, indeed, direct evidence that glyphosate inhibits RNA transcription in animals at a concentration well below the level that is recommended*

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Institute of Science in Society publication, 07/03/05	*for commercial spray application. Transcription was inhibited and embryonic development delayed in sea urchins following exposure to low levels of the herbicide and/or the surfactant polyoxyethyleneamine. The pesticide should be considered a health concern by inhalation during spraying [4]."* *"New research shows that a brief exposure to commercial glyphosate caused liver damage in rats, as indicated by the leakage of intracellular liver enzymes. In this study, glyphosate and its surfactant in Roundup were also found to act in synergy to increase damage to the liver [5]."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Relya, Rick A. Ph.D., Nancy Schoeppner and Jason T. Hoverman, "Pesticides and Amphibians: The Importance of Community Context" Ecological Applications, 15(4), July 1, 2005, pp. 1125-1134	Opposing View #33: *"In contrast to malathion, Roundup had strong direct effects on the tadpoles. Roundup caused a 40o/o reduction in total tadpole survival and biomass. The impact of Roundup (with POEA [polyethoxylated tallow-amine] surfactant) is consistent with previous laboratory studies in a variety of species. Mann and Bidwell (1999) estimated LC5048h at 3.9 to 15.5 mg active ingredient (Al)/L in four species of Australian tadpoles while Perkins et al. (2000) estimated LC5096h values of 12.4 mg Al/L in the African clawed frog (Xenopus laevis). In both studies, it was clear that the high toxicity of Roundup was caused by the POEA surfactant and not from the active ingredient (glyphosate). Lajmanovich et al. (2003) examined the impact of Kleeraway (another formulation of glyphosate that contains the POEA surfactant) on a South American tadpole (Scinax nasicus) and found an LC504sh of 1.74 mg Al/L. In North American tadpoles (Bufo americanus, Rana pipiens, and R. c/amitans), Edginton et al. (2004) found LC5096h of 1.5-4.7 mg Al/I using Vision (a formulation that also includes the POEA surfactant). For the three species used in our mesocosm experiment, Relyea (2005b) found LC5016d values of 1.4 mg Al/L for gray tree frogs, 2.5 mg Al/L for American toads, and 2.5 mg Al/L for leopard frogs. All of this suggests that Roundup with the POEA surfactant can cause substantial mortality in larval amphibians."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the

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	spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Relyea, RA. Ph.D. "The Impact of Insecticides and Herbicides on the Biodiversity and Productivity of Aquatic Communities" Ecological Applications v 15, n. 2, April 1, 2005	Opposing View #34: *"Species richness was reduced by 15% with Sevin, 30% with malathion, and 22o/o with Roundup, whereas 2,4-D had no effect. Both insecticides reduced zooplankton diversity by eliminating cladocerans but not copepods (the latter increased in abundance). The insecticides also reduced the diversity and biomass of predatory insects and had an apparent indirect positive effect on several species of tadpoles, but had no effect on snails. The two herbicides had no effects on zooplankton, insect predators, or snails. Moreover, the herbicide 2,4-D had no effect on tadpoles. However, Roundup completely eliminated two species of tadpoles and nearly exterminated a third species, resulting in a 70% decline in the species richness of tadpoles. This study represents one of the most extensive experimental investigations of pesticide effects on aquatic communities and offers a comprehensive perspective on the impacts of pesticides when nontarget organisms are examined under ecologically relevant conditions."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Morin, Herve "Roundup Doesn't Poison Only Weeds" Le Monde (France) March 12, 2005	Opposing View #35: *"He is joined in his conclusions by Robert Belle, from the National Center for Scientific Research (CNRS) biological station in Roscoff (Finistere), whose team has been studying the impact of glyphosate formulations on sea-urchin cells for several years.* *This recognized model for the study of early stages of cancer genesis earned Tim Hunt the 2001 Nobel Prize in medicine. In 2002, the Finisterian team had shown that Roundup acted on one of the key stages of cellular division.*

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	The Breton team has recently demonstrated (Toxicological Science, December 2004) that a "control point" for DNA damage was affected by Roundup, while glyphosate alone had no effect. "We have shown that it's a definite risk factor, but we have not evaluated the number of cancers potentially induced, nor the time frame within which they would declare themselves," the researcher acknowledges. A sprayed droplet could affect thousands of cells. On the other hand, "the concentration in water and fruits is lower, which is rather reassuring." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Benachour, Nora and Gilles-Eric Sralini "Glyphosate Formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic, and Placental Cells" Chem. Res. Toxicol., 2009, 22 (1), pp 97-105 DOI: 10.1021/tx800218n Publication Date (Web): December 23, 2008	Opposing View #36: *"We have evaluated the toxicity of four glyphosate (G)-based herbicides in Roundup (R) formulations, from 105 times dilutions, on three different human cell types. This dilution level is far below agricultural recommendations and corresponds to low levels of residues in food or feed. The formulations have been compared to G alone and with its main metabolite AMPA or with one known adjuvant of R formulations, POEA. HUVEC primary neonate umbilical cord vein cells have been tested with 293 embryonic kidney and JEG3 placental cell lines. All R formulations cause total cell death within 24 h, through an inhibition of the mitochondrial succinate dehydrogenase activity, and necrosis, by release of cytosolic adenylate kinase measuring membrane damage. They also induce apoptosis via activation of enzymatic caspases 317 activity. This is confirmed by characteristic DNA fragmentation, nuclear shrinkage (pyknosis), and nuclear fragmentation (karyorrhexis), which is demonstrated by DAPI in apoptotic round cells. G provokes only apoptosis, and HUVEC are 100 times more sensitive overall at this level. The deleterious effects are not proportional to G concentrations but rather depend on the nature of the adjuvants. AMPA and POEA separately and synergistically damage cell membranes like R but at different concentrations. Their mixtures are generally even more harmful with G. In conclusion, the R adjuvants like POEA change human cell permeability and amplify toxicity induced already by G, through apoptosis and necrosis. The real threshold of G toxicity must take into account the presence of adjuvants but also G metabolism*

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	and time-amplified effects or bioaccumulation. This should be discussed when analyzing the in vivo toxic actions of R. This work clearly confirms that the adjuvants in Roundup formulations are not inert. Moreover, the proprietary mixtures available on the market could cause cell damage and even death around residual levels to be expected, especially in food and feed derived from R formulation-treated crops." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Gasnier, Celine Ph.D., Coralie Dumont Ph.D., Nora Benachour Ph.D., Emilie Clair Ph.D., Marie-Christine Chagnon Ph.D. and Gilles-Eric Seralini Ph.D. "Glyphosate- based herbicides are toxic and endocrine disruptors in human cell lines" Available online 17 June 2009	Opposing View #37: *"We exposed human liver HepG2 cells, a well-known model to study xenobiotic toxicity, to four different formulations and to glyphosate, which is usually tested alone in chronic in vivo regulatory studies. We measured cytotoxicity with three assays (Alamar Blue®, MTT, Toxilight®), plus genotoxicity (comet assay), anti-estrogenic (on ERa, ER) and anti-androgenic effects (on AR) using gene reporter tests. We also checked androgen to estrogen conversion by aromatase activity and mRNA. All parameters were disrupted at sub-agricultural doses with all formulations within 24 h. These effects were more dependent on the formulation than on the glyphosate concentration. First, we observed a human cell endocrine disruption from 0.5 ppm on the androgen receptor in MDA-MB453-kb2 cells for the most active formulation (R400), then from 2 ppm the transcriptional activities on both estrogen receptors were also inhibited on HepG2. Aromatase transcription and activity were disrupted from 10 ppm. Cytotoxic effects started at 10 ppm with Alamar Blue assay (the most sensitive), and DNA damages at 5 ppm. A real cell impact of glyphosate-based herbicides residues in food, feed or in the environment has thus to be considered, and their classifications as carcinogens/mutagens/reprotoxics is discussed."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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"New Study Links World's Biggest Selling Pesticides to Cancer Swedish Study Finds Exposure to Glyphosate and MCPA Increases Risk for Non-Hodgkin's Lymphoma" Press Release PAN AP, June 21, 1999	Opposing View #38*: "In the study published in the 15 March 1999 Journal of American Cancer Society, the researchers also maintain that exposure to glyphosate 'yielded increased risks for NHL.' They stress that with the rapidly increasing use of glyphosate since the time the study was carried out, 'glyphosate deserves further epidemiologic studies.' "* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Ho, Mae-Wan Ph.D and Prof. Joe Cummins "Glyphosate Toxic & Roundup Worse" Institute of Science in Society report 07/03/05	Opposing View #39: *"There is, indeed, direct evidence that glyphosate inhibits RNA transcription in animals at a concentration well below the level that is recommended for commercial spray application. Transcription was inhibited and embryonic development delayed in sea urchins following exposure to low levels of the herbicide and/or the surfactant polyoxyethyleneamine. The pesticide should be considered a health concern by inhalation during spraying [4]."* *New research shows that a brief exposure to commercial glyphosate caused liver damage in rats, as indicated by the leakage of intracellular liver enzymes. In this study, glyphosate and its surfactant in Roundup were also found to act in synergy to increase damage to the liver [5].* *Three recent case-control studies suggested an association between glyphosate use and the risk of non-Hodgkin lymphoma [6-8]; while a prospective cohort study in Iowa and North Carolina that includes more than 54 315 private and commercial licensed pesticide applicators suggested a link between glyphosate use and multiple myoeloma [9]. Myeloma has been associated with agents that cause either DNA damage or immune suppression."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS

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	(2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Long, Cheryl "Hazards of the World's Most Common Herbicide" Mother Earth News, October/November 2005	Opposing View #40: *"New scientific studies link Roundup (glyphosphate), the most widely used herbicide in the world, to a host of health risks, such as cancer, miscarriages and disruption of human sex hormones."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Study Links Herbicide use and Cancer, A Northwest Coalition for Alternatives to Pesticides publication, 2010	Opposing View #41: *"A series of studies has found that farmers develop non-Hodgkin's lymphoma more often than other people do, but until now it has been difficult for scientists to explain why this increase occurs. New research, however, shows that exposure to the herbicide glyphosate, commonly sold as Roundup, is one explanation. The study was published in 2003 by researchers at the National Cancer Institute, the University of Nebraska Medical Center, Kansas University Medical Center, and the University of Iowa College of Medicine."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Govindarajulu, Purnima P. Ph.D., "Literature review of impacts of glyphosate herbicide on amphibians: What risks can the silvicultural use of this herbicide pose for amphibians in B.C.?" British Columbia Ministery of the Environment, Wildlife Report No. R-28, June 2008	Opposing View #42: *"5. SUMMARY OF GLYPHOSATE IMPACTS ON AMPHIBIANS* *This summary is derived almost entirely from toxicological studies on tadpoles and late-stage anuran embryos. The impact of glyphosate herbicides on other amphibians and other life stages is virtually unknown.* *•Recent studies have shown that tadpoles are one of the vertebrate groups most sensitive to the toxicity effects of*

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	most commercial formulations of glyphosate herbicides, including Vision. *•The estimated LC50 values for some species of amphibians are at or below the expected environmental concentration (EEC) of 1.43 mg a.e./L of Vision (Table 1). Most LC50 values are calculated from experimental durations of 24 to 96 hours, but at low concentrations death may not occur until after 96 hours. This suggests that amphibians may be even more sensitive than the published LCSO values suggest.* *•Although LCSO values have traditionally been used to set hazard quotients, recent risk analysis methodology suggests that LC10 values are better for judging population-level impacts of environmental contaminants (Solomon and Thompson 2003). In at least one published study, all North American amphibian larvae tested to date had LC10 values estimated at or below the EEC for Vision, especially at pH higher than 7.0.* *•In addition to direct mortality effects, glyphosate herbicides also cause sublethal effects, including reduced growth and development rates, behavioural impairment, and genomic effects. The population- level consequences of these sublethal effects have not been tested under field conditions. For example, reduced growth and development rates, which have been documented under laboratory conditions, could translate into increased mortality if amphibian larvae are unable to metamorphose before the end of the season. Similarly, impaired behavioural response to prodding under laboratory conditions could translate to increased susceptibility to predators under field conditions.* *•Impacts have been shown to be synergistically enhanced by interaction with some environmental factors. Of particular concern is that the effects of glyphosate herbicide may be greater when pond pH is 7 or higher (Edginton et al. 2004a). Amphibians in general avoid acidic conditions, preferring to breed in ponds with higher pH, which could increase their vulnerability to glyphosate herbicide impacts.* *•More detailed toxicological studies indicate that the toxicity of glyphosate herbicides arises not from the active ingredient, glyphosate, but from the surfactant, POEA.* *•POEA is thought to interfere with the synthesis of collagen and to reduce the branchial cartilage in the gills of tadpoles and to cause lysis of gill epithelial cells in fish. This could result in loss of osmotic stability and asphyxiation. The toxic mode of action in terrestrial, postmetamorphic amphibians is not known at formulations without POEA surfactants, such as Rodeo, and*

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	formulations with other surfactants, such as Roundup Biactive, have reduced toxicity to amphibians. (pg. 31) **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Christina Howe, Ph.D., Michael Berrill Ph.D., and Bruce D. Pauli "The Acute and Chronic Toxicity of Glyphosate-Based Pesticides in Northern Leopard Frogs" Amphibian Ecology and Pathobiology, August 14, 2002	Opposing View #43*: "Chronic Effects of Glyphosate versus Formulations: Throughout this study glyphosate itself showed no chronic effects on developing tadpoles. The tadpoles reared in the formulations Roundup Original® and Transorb® did show significant physical abnormalities. Abnormalities were also found upon exposure to the surfactant POEA. For all endpoints POEA showed practically identical results to the Roundup Original® formulation whereas the same cannot be said for the Transorb® formulation. The surfactant used in the Transorb formulation is not known (being protected as "Trade Secret"), but has been described as a "surfactant blend". This "surfactant blend" may be responsible for inhibition of metamorphosis, as well as the skewed sex ratio towards female seen in the present study. Developmental abnormalities induced by Roundup are likely a result of endocrine disruption. The thyroid axis can be greatly affected by corticoids and sex steroids which influence hypothalamic and pituitary control (See Dodd and Dodd, 1976, and Hayes, 1997 for review). Corticoids, sex steroids and prolactin have caused delayed metamorphosis and decreased size by both antagonizing and inhibiting thyroid action (Hayes, 1997). Sex steroid can induced sex reversal and intersex in amphibians and mammals, while low thyroid levels interfere with vitellogenesis. A concentration at which the animals were not effected (NOEC) by The Roundup formulations was not determined by this study."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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Relya, Rick Ph.D. "Roundup is Highly Lethal" Dr. Relya Responds to Monsanto's Concerns Regarding Recent Published Study Mindfully.org, April 1, 2005	Opposing View #44: *"Concern #1: Roundup is only intended for terrestrial use, not aquatic use.* *While it may be intended for terrestrial use, there is overwhelming evidence that Roundup gets into aquatic habitats, typically through inadvertent (or unavoidable) aerial overspray (Newton et al. 1984, Goldsborough and Brown 1989, Feng et al. 1990, Thompson et al. 2004). To determine the effect on amphibians, Relyea (2005a) simulated a direct overspray of a small wetland using pond mesocosms (1000-liter tanks). The result was widespread death for many species and the death rate was much higher than expected based on previous studies of Roundup. It is relatively common knowledge that Roundup should not be applied to large ponds and lakes, but it seems to be much less commonly appreciated that many amphibians are not produced in large ponds and lakes due to predation by fish. Instead, small temporary wetlands that may appear to be unimportant and only have 6" of water can, in fact, produce thousands of tadpoles. These small, temporary pools are either not avoided or not avoidable by aerial pesticide applications.* *Moreover, Roundup is not only lethal to amphibian larvae. New studies have found that Roundup can be highly lethal to terrestrial amphibians as well (Relyea 2005c)."* *"Concern #2: The application rate of Roundup was 7 times too high The application rate of 6 ounces per 300 square feet came directly from the label of Monsanto's "Roundup Weed and Grass Killer". What Monsanto is claiming is that the application rate for this Roundup is higher than their listed application rate for other forms of Roundup. However, both application rates come from Monsanto. Moreover, it is well accepted by Monsanto and the applicators of Roundup that some types of weeds require up to four times the recommended application rate to be effective."* *"Concern #4: A past risk assessment has shown that Roundup poses minimal risk to amphibians. The risk assessment was conducted by Giesy et al. (2000), in cooperation with Monsanto, and the assessment was based on the available data at that time. For amphibians, data only existed for four species of Australian tadpoles and one species of African frog. From these studies, the LC50 estimates (the amount of pesticide needed to kill 50% of the animals) were 4 to 16 mg a.i./L (Mann and Bidwell 1999, Perkins et al. 2000).* *More recent LC50 laboratory data for North American amphibians demonstrate that North American amphibians are much more sensitive; LC50 values range from 0.5 to*

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	4.7 mg a.i./L (Edginton et al. 2004, Relyea 2005b). According to U.S. Fish and Wildlife classifications, this means that Roundup can no longer be considered slightly to moderately toxic, but rather moderately to highly toxic to North American amphibians." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Carey, Stephen, Tanja Crk, Colleen Flaherty, Pamela Hurley, James Hetrick, Keara Moore, and Silvia C. Termes "Risks of Glyphosate Use to Federally Threatened California Red-legged Frog (Rana aurora draytonil) -- Pesticide Effects Determination" A Report by the Environmental Fate and Effects Division Office of Pesticide Programs Washington, D.C. 20460, October 17, 2008	Opposing View #45: *"Based on the best available information, the Agency makes a Likely to Adversely Affect determination for the CRLF from the use of glyphosate. Additionally, the Agency has determined that there is the potential for modification of CRLF designated critical habitat from the use of the chemical.* *This assessment indicates that direct effects to the terrestrial-phase CRLF eating broadleaf plants, small insects and small herbivorous mammals on a dietary-basis may be at risk following chronic exposure to glyphosate at application rates of 7,.5 lb a.e./A and above (forestry, areas with impervious surfaces and rights of way). In addition, for one particular formulation (Registration No. 524-424}, medium and large-sized CRLF's eating small herbivorous mammals on a dose-basis may be at risk following acute exposure at an application rate of 5.5 lb formulation/A (industrial outdoor uses). At the lowest application rate of 1.1 lb formulation/A, there is potential risk to medium-sized CRLF's eating small herbivorous mammals on a dose-basis (ornamental lawns and turf)." (Pg. 173)* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.

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Ludwig, Mike "Special Investigation: The Pesticides and Politics of America's Eco- War" Published by Truthout, June 9, 2011	Opposing View #46: *"Glyphosate is the poster child for the global pesticide controversy due to its place in the ongoing debate over mega-farming and genetically engineered crops. Industry scientists say it's one of the safest herbicides in the world, while independent scientists have discovered potential links among the widespread use of glyphosate-based herbicides and non-Hodgkin's lymphoma, birth defects and even attention deficit disorder. Research also shows that additives like surfactants in glyphosate in herbicides like Roundup are more toxic than glyphosate itself and can increase the toxicity of glyphosate."* *"The war on invasive species is a war on a fact of life. Humans have caused or exacerbated these species "invasions" by changing habitats and introducing species to new areas, and now we are trying to turn back the clock in an attempt to prevent nature from taking its new course. As long as people attempt to dominate the land, extract its resources and shape it to their liking, there will be money to be made and dramatic consequences for other livings things. The search for a balance between supporting our collective desire to prosper and a healthy natural world is sure to spark more heated debates for years to come."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Alejandra Paganelli, Victoria Gnazzo, Helena Acosta, Silvia L. Lopez, and Andres E. Carrasco "Glyphosate-Based Herbicides Produce Teratogenic Effects on Vertebrates by Impairing Retinoic Acid Signaling" Publicado por NOGAL DE VIDA, May 20, 2010	Opposing View #47: *"We also observed a gradual loss of the r3 and r5 domains in embryos treated with GBH (compare Figure 5E, F with D), which resembles the results observed in frog embryosin the krox-20 domains (Figures 1B and 2E). Hybridization withthe c-shh probe showed that, as in Xenopus, the prechordalmesoderm domain is preferentially lost in GBH-treated chickembryos (compare Figure 5G with H,I). As the GBH concentra-tion increases, the expression along the embryonic dorsal midlinealso gradually disappears (Figure 5H,l).Therefore, our experiments with chick embryos further extendconclusions from studies about the teratogenic effects of GBHin amphibians to other vertebrate species discussion. The results presented above argue that both GBH andglyphosate itself interfere with key molecular mechanismsregulating early development in both Xenopus and chickenembryos, leading to congenital malformations.*

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	*Sublethal dosesof the herbicide (430 µM of glyphosate in 1/5000 dilutions ofGBH) and injections leading to a final concentration of 8 to 12µM of glyphosate in the injected side of the embryo weresufficient to induce serious disturbances in the expression ofslug, otx2, and shh. These molecular phenotypes were correlatedwith a disruption of developmental mechanisms involving theneural crest, embryonic dorsal midline formation, and cephalicpatterning. Because glyphosate penetration through the cellmembrane requires facilitation by adjuvants present in com- mercial formulations (5, 6), we tested the effects of glyphosatealone by directly microinjecting it into Xenopus embryos. Thesimilarity of the phenotypes obtained in both situations suggeststhat they are attributable to the active principle of GBH andnot to the adjuvants.We will discuss our results in the following context: (1) thecorrelation of our phenotypes with those observed in animalmodels with an impairment of RA signaling or deficits in theexpression of critical genes that control embryonic development;(2) the probable mechanisms underlying the phenotypes inducedby GBH and glyphosate; (3) possible correlations with clinicalcases of human offspring exhibiting malformations in zonesexposed to GBH.Misregulation of RA, shh, and otx2 Are Involved inCephalic Malformations and Neural Crest-Derived Pheno-types Reminiscent of the Effects of GBH and Glyphosate.The phenotypes obtained after GBH treatments or injections ofglyphosate alone are strikingly reminiscent of those observedas a consequence of an excess of RA signaling in vertebratesand humans. Acute or chronic increase of RA levels leads toteratogenic effects during human pregnancy and in experimentalFigure 4. Phenotype induced by GBH is mediated by an increase ofRA signaling (A). Analysis of RA activity with the reporter plasmidRAREZ. All embryos were injected with the reporter plasmid RAREZ,except for uninjected controls, and left untreated or were treated asindicated in the figure until stage 14- 15, when they were processed. Results are expressed as arbitrary luminiscence units per µg of protein.A two-tailed t test was employed to analyze the significance in thedifference of the means. ** p < 0.01; *** p < 0.0001. (B-G) WMISHfor shh and otx2 at tailbud stages. (B) Control embryo. Notochord (n); floor plate (fp); brain (space between bars), eye (arrowhead). (C)Embryo treated with 1/5000 GBH manifesting microcephaly (spacebetween bars), reduced eye_s (arrowhead), diminished Shh signalingfrom the prechordal mesoderm (arrow), and shortened A-P axis (78%,n)9)." (Pg. 6)* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed

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	Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Smith, Jeffery "Genitically Modified Soy Diets Lead and Uterus Changes in Rats" foodconsumer.org, September 22, 2010	Opposing View #48: *"Although there is only a handful of studies on the safety of GM soybeans, there is considerable evidence that glyphosate-especially in conjunction with the other ingredients in Roundup-wreaks havoc with the endocrine and reproductive systems. 'I think the concentration of glyphosate in the soybeans is the likely cause of the problem,' says Ewen.* *Glyphosate throws off the delicate hormonal balance that governs the whole reproductive cycle. 'It's an endocrine buster,' says Ewen, 'that interferes with aromatase, which produces estrogen.' Aromatase is required by luteal cells to produce hormones for the normal menstrual cycle, but it's those luteal cells that have shown considerable alterations in the rats fed GM soybeans.* *GIYphosate is also toxic to the placenta, the organ which connects the mother to the fetus, providing nutrients and oxygen, and emptying waste products. In a 2009 French study at the University of Caen, scientists discovered that glyphosate can kill the cells in the outer layer of the human placenta (the trophoblast membrane), which in turn can kill the placenta.* *The placenta cells are, in Ewen's words, 'exquisitely sensitive to glyphosate.' Only 1/500th the amount needed to kill weeds was able to kill the cells. The amount is so small, according to the study authors the 'residual levels to be expected, especially in food and feed derived from R[oundup] formulation-treated crops' could be enough to 'cause cell damage and even [cell] death.' Furthermore, the effect of the toxin may bioaccumulate, growing worse with repeated consumption from Roundup laden foods.* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Graves, Lucia. "Roundup: Birth Defects Caused By World's Top-Selling Weedkiller, Scientists Say"	Opposing View #49: *"Such reports gained further traction after an Argentine government scientist, Andres Carrasco*

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by Lucia Graves, Published on Friday, June 24, 2011 by Huffington Post	*conducted a study, "Glyphosate-Based Herbicides Produce Teratogenic Effects on Vertebrates by Impairing Retinoic Acid Signaling" in 2009.* *The study, published in the journal Chemical Research in Toxicology in 2010, found that glyphosate causes malformations in frog and chicken embryos at doses far lower than those used in agricultural spraying. It also found that malformations caused in frog and chicken embryos by Roundup and its active ingredient glyphosate were similar to human birth defects found in genetically modified soy-producing regions.* *"The findings in the lab are compatible with malformations observed in humans exposed to glyphosate during pregnancy," wrote Carrasco, director of the Laboratory of Molecular Embryology at the University of Buenos Aires. "I suspect the toxicity classification of glyphosate is too low."* *"Fagan told HuffPost that among developmental biologists who are not beholden to the chemical industry or the biotechnology industry, there is strong recognition that Carrasco's research is credible."* *"For me as a scientist, one of the reasons I made the effort to do this research into the literature was to really satisfy the question myself as to where the reality of the situation lies," he added. "Having thoroughly reviewed the literature on this, I feel very comfortable in standing behind the conclusions Professor Carrasco came to and the broader conclusions that we come to in our paper."* *"We can't figure out how regulators could have come to the conclusions that they did if they were taking a balanced took at the science, even the science that was done by the chemical industry itself."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Smith, Jeffery "Genetically Modified Soy Linked to Sterility, Infant Mortality" foodconsumer.org, September 22, 2010	Opposing View #50: *"This study was just routine," said Russian biologist Alexey V. Surov, in what could end up as the understatement of this century. Surov and his colleagues set out to discover if Monsanto's genetically modified (GM) soy, grown on 91% of US soybean fields,*

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	leads to problems in growth or reproduction. What he discovered may uproot a multi-billion dollar industry. *After feeding hamsters for two years over three generations, those on the GM diet, and especially the group on the maximum GM soy diet, showed devastating results. By the third generation, most GM soy-fed hamsters lost the ability to have babies. They also suffered slower growth, and a high mortality rate among the pups.* *And if this isn't shocking enough, some in the third generation even had hair growing inside their mouths-a phenomenon rarely seen, but apparently more prevalent among hamsters eating GM soy."* *"In addition to the GMOs, it could be contaminants, he said, or higher herbicide residues, such as Roundup. There is in fact much higher levels of Roundup on these beans; they're called "Roundup Ready."* *Bacterial genes are forced into their DNA so that the plants can tolerate Monsanto's Roundup herbicide. Therefore, GM soy always carries the double threat of higher herbicide content, couple with any side effects of genetic engineering.* *Without detailed tests, no one can pinpoint exactly what is causing the reproductive travesties in Russian hamsters and rats, Italian and Austrian mice, and livestock in India and America. And we can only speculate about the relationship between the introduction of genetically modified foods in 1996, and the corresponding upsurge in low birth weight babies, infertility, and other problems among the US population. But many scientists, physicians, and concerned citizens don't think that the public should remain the lab animals for the biotech industry's massive uncontrolled experiment.* *Alexey Surov says, "We have no right to use GMOs until we understand the possible adverse effects, not only to ourselves but to future generations as well. We definitely need fully detailed studies to clarify this. Any type of contamination has to be tested before we consume it, and GMO is just one of them."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.

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Trigona, Marie "GMO - Monsanto Soy Herbicide could Pose Health Risks" Americas Program, Center for International Policy (CIP), July 13, 2009	Opposing View #51: *"A study released by an Argentine scientist earlier this year reports that glyphosate, patented by Monsanto under the name "Round Up," causes birth defects when applied in doses much lower than what is commonly used in soy fields.* *The study was directed by a leading embryologist, Dr. Andres Carrasco, a professor and researcher at the University of Buenos Aires. In his office in the nation's top medical school, Dr. Carrasco shows me the results of the study, pulling out photos of birth defects in the embryos of frog amphibians exposed to glyphosate. The frog embryos grown in petri dishes in the photos looked like something from a futuristic horror film, creatures with visible defects-one eye the size of the head, spinal cord deformations, and kidneys that are not fully developed.* *"We injected the amphibian · embryo cells with glyphosate diluted to a concentration 1,500 times than what is used commercially and we allowed the amphibians to grow in strictly controlled conditions." Dr. Carrasco reports that the embryos survived from a fertilized egg state until the tadpole stage, but developed obvious defects which would compromise their ability to live in their normal habitats.* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Turpen, Aaron, Roundup herbicide can alter morphology of animals - new study Hidden Health Science, May 1, 2012	Opposing View #52: *"Exposure among amphibians and other vertebrate animals to Monsanto's Roundup herbicide has been shown, for the very first time, to actually induce physical changes to the shapes of these animals' bodies. Published in the journal Ecological Applications, the new study reveals once again the incredible hormone- altering power of Roundup, and how even minute exposure to this highly- toxic chemical brew can have disastrous health consequences."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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James, Carrie "Aerial Herbicide Spraying" SitNews (Ketchikan, Alaska) June 19, 2004	Opposing View #53: *"False Research. The EPA has twice caught scientists deliberately falsifying results at research laboratories hired by Monsanto to study glyphosate.* *In 1983, the EPA revealed that Industrial Biotest Laboratories (IBL) routinely falsified results of their 1971 research performed on glyphosate. Tests performed at IBL included eleven out of nineteen total chronic toxicology studies on glyphosate; studies instrumental in its retaining registration in 1974.* *In 1991, the EPA alleged that Craven Laboratories, another lab hired by Monsanto to study the effects of glyphosate, had falsified test results.* *Several methods were used, including manipulation of equipment and notebook entries."* *"Alaska has an economic and cultural dependence on the welfare of salmon and other fish species, so it is particularly vital for Alaskans to know that glyphosate, and even more so glyphosate herbicides, are acutely toxic to fish.* *The toxicity of glyphosate, which is most potently dangerous to younger fish, increases as water temperature rises. Ironically, the use of glyphosate causes water temperatures to increase for several years following treatment, as the herbicide kills shading vegetation. This is significant in more than one way for salmon, as juvenile salmon require cold water to thrive under even normal environmental circumstances.* *The effects of glyphosate on fish have been documented using rainbow trout, which exhibited erratic swimming and labored breathing, effects which can increase the risk that fish will be eaten, as well as affecting ability to feed, migrate, and reproduce."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Edginton, Andrea N.Ph.D. "Multiple stressor effects in amphibians: herbicide/pH interaction" A presentation at the 5th Annual of the Canadian	Opposing View #54: *"Worldwide, amphibian populations are reported to be in a state of decline. Causative factors are incompletely understood. In ecosystems of*

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Amphibian and Reptile Conservation Network, September 22-25, 2000	*northeastern North America, multiple stressors of pesticide contamination and acidification may be involved. As an initial component of a multi-tier investigation, the effects of forest-use herbicides Vision® (glyphosate) andRelease® (triclopyr) are being studied using Xenopus laevis, Rana pipiens and Rana clamitans.* *Two different life stages of amphibians, embryos (blastula stage) and larvae (Gesner stage 25), are being used. Interactive effects of various herbicide concentrations and pH (5.5 and 7.5) are being studied using the organisms exposed in 96hr static renewal tests. The Frog Embryo Teratogenesis Assay - Xenopus (FETAX) protocol is used for the embryo stage for the determination of mortality, malformation and growth data. The larval exposures are being developed and refined to compare sensitivities to the FETAX assay. The larval 96hr static renewal exposure is followed by a 10-day water-only recovery period. Sensitivities are being compared to determine the appropriateness of the exotic amphibian Xenopus Jaevis for toxicity testing. Results on toxicity to date indicate that Vision® is more toxic to all species at pH 7.5 than at pH 5.5. The reverse has been shown for Release®. In addition, the larval stage has consistently been shown to be more sensitive than the blastula stage. Understanding species sensitivities and herbicide/pH interactions will aid in altering forestry herbicide use patterns to minimize effects on amphibians and other non- target organisms."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Benachour, Nora and Gilles-Eric Seralini "Glyphosate Formulations Induce Apoptosis and Necrosis in Human Umbilical, Embryonic, and Placental Cells" Chemical Research in Toxicology, 2009, 22 (1), pp 97-105	Opposing View #55: *"We have evaluated the toxicity of four glyphosate (G)-based herbicides in Roundup (R) formulations, from 105 times dilutions, on three different human cell types. This dilution level is far below agricultural recommendations and corresponds to low levels of residues in food or feed. The formulations have been compared to G alone and with its main metabolite AMPA or with one known adjuvant of R formulations, POEA. HUVEC primary neonate umbilical cord vein cells have been tested with 293 embryonic kidney and JEG3 placental cell lines. All R formulations cause total cell death within 24 h, through an inhibition of the mitochondrial succinate dehydrogenase activity, and necrosis, by release of cytosolic adenylate kinase*

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	measuring membrane damage. They also induce apoptosis via activation of enzymatic caspases 3/7 activity. This is confirmed by characteristic DNA fragmentation, nuclear shrinkage (pyknosis), and nuclear fragmentation (karyorrhexis), which is demonstrated by DAPI in apoptotic round cells. G provokes only apoptosis, and HUVEC are 100 times more sensitive overall at this level. The deleterious effects are not proportional to G concentrations but rather depend on the nature of the adjuvants. AMPA and POEA separately and synergistically damage cell membranes like R but at different concentrations. **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
From Chapter 3. Adverse impacts in the report: "Risky Business: Invasive species management on National Forests - A review and summary of needed changes in current plans, policies and programs" A publication of the Kettle Range Conservation Group, February, 2001	Opposing View #56: *"Case example: Okanogan NF Integrated Weed Management Environmental Assessment (EA) (1997, 1999) The Okanogan NF Integrated Weed Management EA for 1997 received many comments from the public asking for documentation and analysis of the risks of herbicides to human health and safety, yet all of these concerns for safety were lumped into a single issue on p. 15-16:* *Noxious weed populations can degrade recreational experiences by decreasing the desirability of campsites, replacing native plant populations in developed and dispersed areas and changing the scenery. Herbicide contact could pose risks to human health through skin exposure, inhalation, or ingestion. Some noxious weeds also pose risks to human health.* *The marginalization of human health as mere "issues" rather than actual hazards suggests that there was never any intention of questioning the safety or use of herbicides, except in a very limited fashion, and this is borne out in the analysis section.* *Two years later the Okanogan NF prepared a second EA (1999) and through another public comment process, the issues identified through public comments were exactly the same.* *Why are the issues of public health ignored? According to the rationalization given in the EA (Okanogan NF, 1997, p. 17), public comments were addressed in a "higher level*

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	document". In other words, concerns about human health and safety were not considered in the EA. By its limited scope, the agency effectively avoids having to consider issues that it doesn't want to. *The purpose of an EA is to assess a problem, propose and evaluate alternatives and select the most effective remedy, which should be the least harmful to the environment. In this case, the alternative to use herbicides had been selected prior to doing an analysis. The EA was only used to justify a predetermined decision rather than truly explore alternatives."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Yadav, Sushama, Pd.D., Giri, Sarbani, Ph.D., Singha, Utsab, Ph.D., Boro, Freeman, Ph.D., Gin, Arurudha, Ph.d., Toxic and genotoxic effects of Roundup on tadpoles of the Indian skittering frog (Euflictis cyanophlyctis) in the presence and absence of predator stress, Aquatic Toxicology, May 15, 2013	Opposing View #57: *"in a concentration-dependent manner. Presence of predator stress apparently increased the toxicity and genotoxicity of Roundup; but these effects were not statistically significant.* *These findings suggest that Roundup at environmentally relevant concentrations has lethal and genotoxic impact on E. cyanophlyctis; which may have long-term fitness consequence to the species."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"Herbicide Used in Argentina Could Cause Birth Defects" Latin American Herald Tribune, April 30, 2009	Opposing View #58: *"BUENOS AIRES - The herbicide used on genetically modified soy - Argentina's main crop - could cause brain, intestinal and heart defects in fetuses, according to the results of a scientific investigation released Monday.* *Although the study "used amphibian embryos," the results "are completely comparable to what would happen in the*

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	development of a human embryo," embryology professor Andres Carrasco, one of the study's authors, told Efe." *"Carrasco said that the research found that "pure glyphosate, in doses lower than those used in fumigation, causes defects ... (and) could be interfering in some normal embryonic development mechanism having to do with the way in which cells divide and die."* *"The companies say that drinking a glass of glyphosate is healthier than drinking a glass of milk, but the fact is that they've used us as guinea pigs," he said."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Western Leopard Frogs Move a Step Closer to Protection -- U.S. Fish and Wildlife Service: Pesticides, Disease, Invasive Species, and Habitat Loss May Threaten Native Frogs with Extinction, Center for Biological Diversity news release, June 30, 2009	Opposing View #59: *"DENVER, Colo.- Recognizing the threat posed by expanding use of dangerous pesticides across 18 western states, competition from invading bullfrogs, nonnative diseases, and loss of wetlands, the U.S. Fish and Wildlife Service will announce tomorrow their conclusion that western populations of the northern leopard frog may warrant protection under the Endangered Species Act."* *"The use of Roundup (a proprietary herbicide containing glyphosate), which is lethal to amphibians even at recommended levels according to recent studies, also threatens the western leopard frog. Roundup Ready crops (resistant to Roundup so the herbicide can be broadly applied to kill weeds) comprise a significant portion of crop acreage in the midwestern United States. In 2004, Roundup Ready soybean crops comprised 89 percent of all soybean crops in Iowa, 82 percent in Minnesota, 92 percent in Nebraska, 82 percent in North Dakota, and 95 percent in South Dakota."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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RoundUp Herbicide Toxicity Natures Country Store http://www.naturescountrvstore.com/r6undup/index.html	Opposing View #60: *"RoundUp Herbicide has been touted by its maker, Monsanto, as safe and environmentally friendly. As such, it has become the most popular herbicide in use today. Advertising by Monsanto has led the public to believe that RoundUp is "safe as table salt," a phrase used quite often by its proponents to describe it.* *Studies used for RoundUp's initial registration were fraudulent. There is no indication that these studies have been replaced with other, more valid, studies. The public perception of RoundUp as safe, environmentally friendly, and no more harmful than table salt has impeded the normal scientific study to which a pesticide would normally be subjected. Research grants have been concentrated in the areas of pesticides perceived to be more detrimental to humans.* *New York State's Attorney General has sued Monsanto for claiming that RoundUp is "safe" and "environmentally friendly." This suit ended in a settlement with Monsanto in which Monsanto agreed to cease and desist from using these terms in advertising RoundUp in the state of New York. Monsanto, while not admitting any wrongdoing, paid the state of New York $250,000 in settlement of this suit. When Monsanto violated the first settlement agreement by advertising within New York that RoundUp is "safe," a second agreement was negotiated."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Why Glyphosate Should Be Banned, Institute of Science in Society Special Report 10/10/12 http://www.i-sis.org.uk/Why_Glyphosate_Should_be_Banned.php	Opposing View #61: •*Monsanto and the European Commission (EC) have known about birth defects since the 1980s. Industry studies found statistically significant skeletal and/or visceral abnormalities as well as reduced viability and increase in spontaneous abortions in rats and rabbits exposed to high doses of glyphosate. Lower doses were later shown to cause dilated hearts. The EC dismissed all the findings.* •*Independent studies have since found caudal vertebrae loss in rats treated with sub-lethal doses of the herbicide; as well as craniofacial abnormalities, increased*

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	embryonic mortality and endocrine disruption, abnormal onset of puberty, and abnormal sexual behaviour and sperm count in male offspring of mothers exposed during gestation. *•GM soybean-fed female rats gave birth to excessive numbers of severely stunted pups, with over half of the litter dead by three weeks, and the surviving pups were sterile.* *•Non-mammalian animals exposed to glyphosate resulted in increased gonad size, increased mortality, craniofacial abnormalities correlating with abnormal retinoic acid signalling, and reduced egg viability.* *•In vitro exposure to glyphosate resulted in endocrine disruption and death of cells of the testis, placenta, and umbilical cord.* *•A long term in vivo study on rats found females exposed to Roundup and/or Roundup Ready GM maize were two to three times as likely to die as controls and much more likely to develop large mammary tumours, while males presented large tumours four times controls and up to 600 days earlier.* *•Clinical data from Argentina are consistent with lab findings of increases in birth defects and cancers in regions with large areas cultivating glyphosate-tolerant soybean.* *•Endocrine disruption has been observed in both in vivo and in vitro studies in the laboratory, including abnormal levels of testosterone, aromatase enzyme, testosterone and oestrogen receptors, leutinising hormone, follicle-stimulating hormone. Endocrine disruption can lead to cancers and reproductive problems.* *•Epidemiological studies have found links to cancer including non- Hodgkin lymphoma and increased plasma cell proliferation. Cancer rates have risen in in glyphosate-use zones in Argentina. Lab studies found significant increases in interstitial cell tumour incidence in rats as well as skin tumour-promoting activity. Numerous lab studies including those performed by industry showed glyphosate damages DNA of cells in culture as well as in humans living in glyphosate- sprayed regions of Argentina. Non-mammalian studies found defects in cell cycle checkpoints and DNA damage repair machinery. DNA damage is a major prelude to cancers. AMPA, the glyphosate metabolite, also has genotoxic effects.* *•Neurotoxicity effects include Parkinsonism have emerged following acute exposure. Exposure to glyphosate resulted in oxidative stress in lab animals and death of neuronal cells, correlating with Parkinsonian pathology. Acute exposure in fish resulted in acetylcholine esterase (AChE)*

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	inhibition. An epidemiological study linked glyphosate - exposure to Attention-Deficit-Hyperactive disorder in children, a disorder associated with AChE inhibition. The original neurotoxicity studies carried out by industry were ruled invalid by the US Environment Protection Agency and urgently need re-examining by independent scientists. *•Internal organ toxicity has been documented in animal feeding studies with glyphosate-tolerant soybean. Rats suffered kidney abnormalities including renal leakage and ionic disturbances, and liver pathology including irregular hepatocyte nuclei, and increased metabolic rates.* *•Acute toxicity of glyphosate is officially declared low by government agencies; however agricultural workers have reported many symptoms including skin irritation, skin lesions, eye irritation, allergies, respiratory problems and vomiting. Ingestion of large volumes causes systemic toxicity and death.* *•Widespread use of glyphosate has led to the evolution of glyphosate- resistant weeds covering an estimated 120 million hectares globally in 2010. So far, 23 species of weeds have been recorded, forcing Monsanto to acknowledge the problem and protect their profits by declaring that their warranty does not cover yield losses. Glyphosate- resistant weeds are threatening the utility of glyphosate and glyphosate-tolerant crops. Resistant weeds are likely responsible for increased herbicide use. Argentinian use went from 2 to 20 litres per hectare between 1996 and 2010.* *•Glyphosate-tolerant crops, as well as other crops grown subsequently in the same fields are affected by glyphosate's metal chelating properties. Chelation and immobilisation of metal micronutrients such as manganese damages physiological processes in the plant including disease resistance and photosynthesis. Numerous diseases including Goss' wilt, Fusarium wilt, and Take All are now widespread in the US. More than 40 diseases have been linked to glyphosate use. Reduced lignin content in glyphosate-tolerant crops leads to reduced water retention, requiring more water, and severely compromising yields during drought years.* *•Soil biology is strongly disrupted by glyphosate, which is toxic to many beneficial micro- and macro-organisms including earthworms. It harms a wide range of microbes, those producing indole-acetic acid (a growth-promoting auxin), responsible for mycorrhizae associations, phosphorus & zinc uptake; microbes such as Pseudomonads and Bacillus that convert insoluble soil oxides to plant-available forms of manganese and iron; nitrogen-fixing bacteria Bradyrhizobium, Rhizobium; and*

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	other organisms involved in the biological control of soil-borne diseases. *•Glyphosate may be retained and transported in soils, with long-lasting cumulative effects on soil ecology and fertility, especially in northern ecosystems with long biologically inactive winters.* *•Glyphosate's high water solubility makes aquatic wild-life very vulnerable. Lab studies showed extreme toxicity, killing many frog species. Roundup decreased the survival of algae and increased toxic bloom-forming cyanobacteria, hence accelerating the deterioration of water quality especially in small water systems.* *•Indirect effects through habitat disruption are also a concern, as highlighted by the major decline of Monarch butterfly populations whose larvae feed on milkweed that are largely destroyed by glyphosate applications in the US.* *•Livestock illnesses are linked to GM diets, and include reproductive problems, diarrhoea, bloating, spontaneous abortions, reduced live births, inflamed digestive systems, and nutrient deficiency. This has translated into much reduced profit for farmers.* *•Contamination of ground water supplies as well as rain and air has been documented in Spain and the US, threatening our drinking water, leaving people vulnerable to exposure. Berlin city residents were recently shown to carry glyphosate levels above permitted EU drinking water levels."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Heang, Chee Yoke "New Evidence Establishes Dangers of Roundup" Third World Resurgence, No. 176, April 2005	Opposing View #62: *"Three recent studies show that Roundup, which is used by farmers and home gardeners, is not the safe product we have been led to trust.* *A group of scientists led by biochemist Professor Gilles-Eric Seralini from the University of Caen in France found that human placental cells are very sensitive to Roundup at concentrations lower than those currently used in agricultural application.*

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	An epidemiological study of Ontario farming populations showed that exposure to glyphosate, the key ingredient in Roundup, nearly doubled the risk of late miscarriages. Seralini and his team decided to research the effects of the herbicide on human placenta cells. Their study confirmed the toxicity of glyphosate, as after eighteen hours of exposure at low concentrations, large proportions of human placenta began to die. Seralini suggests that this may explain the high levels of premature births and miscarriages observed among female farmers using glyphosate." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"Columbian Court Suspends Aerial Spraying of Roundup on Drug Crops" Reuters, July 27, 2001	Opposing View #63: *"Colombia - A Colombian court on Friday ordered the government to suspend immediately aerial spraying of drug crops with the herbicide glyphosate, a potential blow to President Andres Pastrana's anti-cocaine offensive.* *Bogota Judge Gilberto Reyes Delgado, ruling in favor of indigenous groups that had protested the spraying program, said he had asked the government to provide studies on glyphosate's effects on the environment and human health."* *"Ecuador recently asked Colombia to stop aerial crop spraying near the border the two nations share over fears glyphosate could harm Ecuadoreans' health and damage subsistence crops in the region's jungle towns."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.

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Philpott, Tom. "Why Monsanto is paying farmers to spray its rivals' herbicides" Grist, October 20, 2010	Opposing View #64: *"In short, Monsanto's Roundup Ready technology is emerging as an environmental disaster. The question isn't why a judge demanded an environmental impact study of Roundup Ready sugar beets in 201O; it's that no one did so in 1996 before the technology was rolled out. After all, the Union of Concerned Scientists was already quite, well, concerned back then."* *"As I wrote in June, rather than spark a reassessment of the wisdom of relying on toxic chemicals, the failure of Roundup Ready has the U.S. agricultural establishment scrambling to intensify chemical use. Companies like Dow Agriscience are dusting off old, highly toxic poisons like 2, 4-D and promoting them as the "answer" to Roundup's problems."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"Glyphosate Herbicide Information Profile" Forest Service Pacific Northwest Region, February, 1997	Opposing View #65: *"Glyphosate is no more than slightly toxic to fish, and practically non-toxic to amphibians (McComb 1990) and aquatic invertebrate animals." (page 4)* *"For glyphosate and its formulations, findings are from studies conducted by the manufacturer. These studies have been presented to EPA to support product registration, but may not be available to the public. (page 5)* *"Since the 1988 rating, EPA has concluded that glyphosate should be classified as having evidence of noncarcinogenicity for humans. There was no convincing evidence of carcinogenicity in new studies in two animal species (Dykstra and Ghali 1991). (page 7)* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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"Monsanto's Roundup Herbicide Threatens Public Health" Rachel's Environment and Health News, issue 751, Sept. 5, 2002.	Opposing View #66: *"Two new studies indicate that Monsanto's herbicide, Roundup, is a hormone-disruptor and is associated with birth defects in humans.* *Farm families that applied pesticides to their crops in Minnesota were studied to see if their elevated exposure to pesticides caused birth defects in their children. The study found that two kinds of pesticides -- fungicides and the herbicide Roundup -- were linked to statistically significant increases in birth defects. Roundup was linked to a 3-fold increase in neurodevelopmental (attention deficit) disorders. [EHP Supplement 3, Vol. 110 (June 2002), pgs. 441-449.]* *"A recent test tube study reveals that Roundup can severely reduce the ability of mouse cells to produce hormones. Roundup interferes with a fundamental protein called StAR (steroidogenic acute regulatory protein). The StAR protein is key to the production of testosterone in men (thus controlling male characteristics, including sperm production) but also the production of adrenal hormone (essential for brain development), carbohydrate metabolism (leading to loss or gain of weight), and immune system function. The authors point out that "a disruption of the StAR protein may underlie many of the toxic effects of environmental pollutants." [EHP Vol. 108, No. 8 (August 2000), pgs. 769-776.]"* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Kruger, Monica Ph.D. et al. "Detection of Glyphosate Residues .in Animals and Humans" Journal of Environmental & Analytical Toxicology, 2014, 4:2	Opposing View #67: *"Exposure of mammals to glyphosate may cause loss of mitochondrial transmembrane potential and result in oxidative stress to liver and brain [27, 28]. Both apoptosis and autophagy are involved in glyphosate toxicity mechanisms [29] Case reports indicated that exposure to glyphosate was related to Parkinsonism [19, 30].* *Conclusions* *Glyphosate residue could reach humans and animals through feed and excreted in urine. Presence of glyphosate in urine and its accumulation in animal tissues is alarming*

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	even at low concentrations. Unknown impacts of glyphosate on human and animal health warrants further investigations of glyphosate residues in vertebrates and other non-target organisms." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"USDA refuses to test foods for glyphosate contamination, says pesticides are safe to eat" Published in Natural News, January 9, 2015	Opposing View #68: *"Only 23 of the 9,990 food samples tested, says the USDA, showed pesticide residues exceeding the established tolerance levels. Based on this, the agency is now claiming that the food supply doesn't pose a safety concern, and that consumers can eat up without worry.* *But what the agency isn't divulging is that tolerance levels continually change as a result of corporate lobbying. As more pesticides are needed to grow genetically-modified organisms (GMOs) and other unnatural factory foods, more residues remain, thus the need for new limits.* *Not only does the EPA continue to evaluate the safety of pesticides in isolation, ignoring the effects of synergistic, real-life exposures to many different pesticides, but the agency has also repeatedly succumbed to corporate lobbying pressures to up the safety limits for known hazardous pesticides."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Projects.
"Research Reveals Previously Unknown Pathway by which Glyphosate Wrecks Health" By Dr. Mercola, Published by Mercola.com, May 14, 2013	Opposing View #69: *"As the years roll on, such suspicions are becoming increasingly validated. In recent weeks, we've not only learned that GE corn is in no way comparable to natural corn in terms of nutrition, we're also discovering the ramifications of dousing our crops with large amounts of glyphosate -the active ingredient in Monsanto's broad-spectrum herbicide Roundup."*

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	"While Monsanto insists that Roundup is safe and "minimally toxic" to humans, Samsel and Seneff's research tells a different story altogether. Their report, published in the journal Entropy, argues that glyphosate residues, found in most commonly consumed foods in the Western diet courtesy of sugar, corn, soy and wheat, "enhance the damaging effects of other food-borne chemical residues and toxins in the environment to disrupt normal body functions and induce disease." According to the authors: *"Negative impact on the body is insidious and manifests slowly over time as inflammation damages cellular systems throughout the body."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"Autism Will Afflict Half Of The American Children By 2025, And Glyphosate Is To Blame, MIT Doctor Says"Published in lnquisitr, January 7, 2015	Opposing View #70: *"Glyphosate may be the motivating factor for the autism rate increase projected by 2015. MIT Computer Science and Artificial Intelligence Laboratory's Dr. Stephanie Seneff said that half of the children in the United States will be born with autism in the next decade.* *Autism and glyphosate are linked, according to Dr. Stepanie Seneff, and a host of other researchers who have studied the chemical, which is very popular with biotech giants like Monsanto and Syngenta. Dr. Seneff asks the following:* *"Is there a toxic substance that is currently in our environment on the rise in step with increasing rates of Autism that could explain this?...* *The answer is yes, I'm quite sure that I'm right, and the answer is glyphosate."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.

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"Glyphosate Testing Full Report: Findings in American Mothers' Breast Milk, Urine and Water."Published by Moms Across America, April 7, 2014	Opposing View #71: *"In the first ever testing on glyphosate herbicide in the breast milk of American women, Moms Across America and Sustainable Pulse have found 'high' levels in 3 out of the 10 samples tested. The shocking results point to glyphosate levels building up in women's bodies over a period of time, which has until now been refuted by both global regulatory authorities and the biotech industry."* *"There is currently no regulatory limit for the amount of glyphosate in breast milk anywhere in the world. However, the EPA has set a legally enforceable maximum contaminant level (MCL) for glyphosate of 700 ug/I in drinking water, which is 7,000 times higher than the MCL in Europe."* *"Earth Open Source Research Director Claire Robinson said, "Regulators and industry always say it is the dose that makes the poison, and even the increasing levels of glyphosate currently found in food and feed and the environment are not a problem. However, that argument only holds true if glyphosate doesn't build up in the human body and is excreted as fast as we take it in. These breast milk results suggest glyphosate may bio-accumulate. That means that our body tissues might be exposed to higher levels than the so-called safe levels set by regulators. So the regulations are not protecting us."* *"Shockingly, the new US testing by Moms Across America and Sustainable Pulse, with support from Environmental Arts & Research, found maximum glyphosate levels in urine over 8 times higher than those found in Europe."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Jayasumana, Channa, Ph.D., Gunatilake, Sarath, Ph.D. and Senanayake, Priyantha, "Glyphosate, Hard Water and Nephrotoxic Metals: Are They the Culprits Behind the Epidemic of Chronic Kidney Disease of Unknown Etiology in Sri Lanka? Int. J. Environ. Res. Public Health 2014, 11(2), 2125-2147	Opposing View #72: *"The GMA lattice hypothesis gives rational and consistent explanations to the many observations and unanswered questions associated with the mysterious kidney disease in rural Sri Lanka. Furthermore, it may explain the similar epidemics of CKDu observed in Andra Pradesh, India and Central America. Although glyphosate alone does not cause an epidemic of chronic kidney disease, it seems to have acquired the ability to destroy the renal tissues of thousands of farmers when it forms complexes with a*

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	localized geo environmental factor (hardness) and nephrotoxic metals. It is logical to find out other agricultural areas in the World where excessive use of glyphosate and drinking ground water with high hardness and the contamination of ground water and food with nephrotoxic metals have overlapped in causing kidney damage." (under 5. Conclusions) **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Paletta GL, Ph.D, Larriera A, Ph.D., Kleinsorge E, Ph.D., and Mudry MD, Ph.D., " Genotoxicity of the herbicide formulation Roundup (glyphosate) in broad-snouted caiman (Caiman latirostris) evidenced by the Comet assay and the Micronucleus test." Mutat Res. 2009 Jan 31;672(2):95-102.	Opposing View #73: *"Caiman embryos were exposed at early embryonic stage to different sub-lethal concentrations of Roundup (50, 100, 200, 300, 400, 500, 750, 1000, 1250 and 1750microg/egg). At time of hatching, blood samples were obtained from each animal and two short-term tests, the Comet assay and the Micronucleus (MN) test, were performed on erythrocytes to assess DNA damage. A significant increase in DNA damage was observed at a concentration of 500microg/egg or higher, compared to untreated control animals ($p<0.05$). Results from both the Comet assay and the MN test revealed a concentration-dependent effect. This study demonstrated adverse effects of Roundup on DNA of C. latirostris and confirmed that the Comet assay and the MN test applied on caiman erythrocytes are useful tools in determining potential genotoxicity of pesticides. The identification of sentinel species as well as sensitive biomarkers among the natural biota is imperative to thoroughly evaluate genetic damage, which has significant consequences for short- and long- term survival of the natural species."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Projects.

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Paganelli A, Ph.D., Gnazzo V, Ph.D, Acosta H, Lopez SL, Ph.D. and Carrasco AE, Ph.D. "Glyphosate-based herbicides produce teratogenic effects on vertebrates by impairing retinoic acid signaling." Chem Res Toxicol. 2010 Oct 18;23(10):1586-95	Opposing View #74: *"The broad spectrum herbicide glyphosate is widely used in agriculture worldwide. There has been ongoing controversy regarding the possible adverse effects of glyphosate on the environment and on human health. Reports of neural defects and craniofacial malformations from regions where glyphosate-based herbicides (GBH) are used led us to undertake an embryological approach to explore the effects of low doses of glyphosate in development. Xenopus laevis embryos were incubated with 1/5000 dilutions of a commercial GBH. The treated embryos were highly abnormal with marked alterations in cephalic and neural crest development and shortening of the anterior- posterior (A-P) axis. Alterations on neural crest markers were later correlated with deformities in the cranial cartilages at tadpole stages.* *Embryos injected with pure glyphosate showed very similar phenotypes. Moreover, GBH produced similar effects in chicken embryos, showing a gradual loss of rhombomere domains, reduction of the optic vesicles, and microcephaly. This suggests that glyphosate itself was responsible for the phenotypes observed, rather than a surfactant or other component of the commercial formulation."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Paganelli A 1, Gnazzo V, Ph.D., Acosta H, Ph.D., Lopez SL, Carrasco AE "Glyphosate-based herbicides produce teratogenic effects on vertebrates by impairing retinoic acid signaling." Chem Res Toxicol. 2010 Oct 18;23(10):1586-95	Opposing View #75: *"There has been ongoing controversy regarding the possible adverse effects of glyphosate on the environment and on human health. Reports of neural defects and craniofacial malformations from regions where glyphosate-based herbicides (GBH) are used led us to undertake an embryological approach to explore the effects of low doses of glyphosate in development.* *Xenopus laevis embryos were incubated with 1/5000 dilutions of a commercial GBH. The treated embryos were highly abnormal with marked alterations in cephalic and neural crest development and shortening of the anterior-posterior (A-P) axis. Alterations on neural crest markers were later correlated with deformities in the cranial cartilages at tadpole stages.*

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	Embryos injected with pure glyphosate showed very similar phenotypes. Moreover, GBH produced similar effects in chicken embryos, showing a gradual loss of rhombomere domains, reduction of the optic vesicles, and microcephaly. This suggests that glyphosate itself was responsible for the phenotypes observed, rather than a surfactant or other component of the commercial formulation. *"The direct effect of glyphosate on early mechanisms of morphogenesis in vertebrate embryos opens concerns about the clinical findings from human offspring in populations exposed to GBH in agricultural fields."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
D.R. Van Stempvoort' , Ph.D., J.W. Roy , Ph.D., S.J. Brown , G. Bickerton "Residues of the herbicide glyphosate in riparian groundwater in urban catchments" Chemosphere, Volume 95, January 2014, Pages 455-463	Opposing View #76: *"Glyphosate and AMPA were detected in shallow riparian groundwater at 4 of 5 stream sites in urban catchments in Canada and each were found in approximately 1 in 10 of the samples overall."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Following "Approved" Label Directions on Herbicide Containers does not Assure Safety	
Cox, Caroline, "Quality of Toxicology Testing" Journal of Pesticide Reform, Volume 15, Number 3, Fall 1995. Northwest Coalition for Alternatives to Pesticides, Eugene, OR. Glyphosate, Part 1: Toxicology	Opposing View #1: *"Tests done on glyphosate to meet registration requirements have been associated with fraudulent practices.* *Laboratory fraud first made headlines in 1983 when EPA publicly announced that a 1976 audit had discovered "serious deficiencies and improprieties" in toxicology studies conducted by Industrial Biotest Laboratories (IBT).44 Problems included "countless deaths of rats*

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	and mice that were not reported," "fabricated data tables," and "routine falsification of data." *IBT was one of the largest laboratories performing tests in support of pesticide registrations.44 About 30 tests on glyphosate and glyphosate-containing products were performed by IBT, including 11 of the 19 chronic toxicology studies.45 A compelling example of the poor quality of IBT data comes from an EPA toxicologist who wrote, "It is also somewhat difficult not to doubt the scientific integrity of a study when the IBT stated that it took specimens from the uteri (of male rabbits) for histopathological examination. "(Emphasis added.)* *In 1991, laboratory fraud returned to the headlines when EPA alleged that Craven Laboratories, a company that performed contract studies for 262 pesticide companies including Monsanto, had falsified test results.47 "Tricks" employed by Craven Labs included "falsifying laboratory notebook entries" and "manually manipulating scientific equipment to produce false reports." Roundup residue studies on plums, potatoes, grapes, and sugarbeets were among the tests in question.* *The following year, the owner/president of Craven Laboratories and three employees were indicted on 20 felony counts. A number of other employees agreed to plead guilty on a number of related charges. 50 The owner was sentenced to five years in prison and fined $50,000; Craven Labs was fined 15.5 million dollars, and ordered to pay 3.7 million dollars in restitution.* *Although the tests of glyphosate identified as fraudulent have been replaced, these practices cast shadows on the entire pesticide registration process."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"Species from Pesticides - Weakened" Rachel Carson Council Inc., Issues & Insights October, 2004	Opposing View #2: *"In 2004 the "Counterpart Regulations," strongly supported by industry, were proposed to streamline EPA's pesticide review process at the expense of the most vulnerable life forms in our country, Endangered and Threatened Species aka Listed Species (1,265 species are "Listed"). The critical change these regulations bring about is elimination of the requirement for consultations with wildlife experts at the*

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	U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) by EPA reviewers evaluating adverse impacts of pesticides on Listed Species and their habitats. RCC opposed the Counterpart Regulations with comments, but, sadly, the Regulations were issued in final form on July 29, 2004, despite our objections. Over 125,000 public comments were received by the Fish and Wildlife Service, and they ran 2 to 1 against the Counterpart Regulations. *RCC Insight:* *Apparently, the public's concerns did not make a difference to the people at FWS and NMFS, or did they? We wonder whether the scientists involved with protecting wildlife at both "Services" would want to be bringing their experience and knowledge to bear on decisions made by EPA with respect to pesticides, if it were up to them. Perhaps they would prefer to be part of the evaluation process and they do not concur with finalizing the Counterpart Regulations. However, the fact is that decision-makers, by finalizing these changes, support an action that will weaken Endangered Species' protection from poisoning and habitat degradation due to pesticides. This latest environmental rollback can mean increasingly hazardous conditions in rivers, lakes and wetlands. A further risk is weakening of the Endangered Species Act itself. (Text of our "Comments" is available through our website -- rachelcarsoncouncil.com)"* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Weed-Whacking Herbicide Proves Deadly to Human Cells, By Crystal Gammon and Environmental Health News June 23, 2009	Opposing View #3: *"Used in yards, farms and parks throughout the world, Roundup has long been a top-selling weed killer. But now researchers have found that one of Roundup's inert ingredients can kill human cells, particularly embryonic, placental and umbilical cord cells.* *Until now, most health studies have focused on the safety of glyphosate, rather than the mixture of ingredients found in Roundup. But in the new study, scientists found that Roundup's inert ingredients amplified the toxic effect on human cells-even at concentrations much more diluted than those used on farms and lawns.*

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	One specific inert ingredient, polyethoxylated tallowamine, or POEA, was more deadly to human embryonic, placental and umbilical cord cells than the herbicide itself - a finding the researchers call "astonishing." *"The research team suspects that Roundup might cause pregnancy problems by interfering with hormone production, possibly leading to abnormal fetal development, low birth weights or miscarriages.* *Monsanto, Roundup's manufacturer, contends that the methods used in the study don't reflect realistic conditions and that their product, which has been sold since the 1970s, is safe when used as directed. Hundreds of studies over the past 35 years have addressed the safety of glyphosate.* *"Roundup has one of the most extensive human health safety and environmental data packages of any pesticide that's out there," said Monsanto spokesman John Combest. "It's used in public parks, it's used to protect schools. There's been a great deal of study on Roundup, and we're very proud of its performance."* *The EPA considers glyphosate to have low toxicity when used at the recommended doses.* *"Risk estimates for glyphosate were well below the level of concern," said EPA spokesman Dale Kemery. The EPA classifies glyphosate as a Group E chemical, which means there is strong evidence that it does not cause cancer in humans."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"A multinational Exposed" Frontline, Volume 22 - Issue 05, Feb. 26 - Mar. 11, 2005	Opposing View #4: *"However, the U.S. government regulatory agencies seem to have given Monsanto a long rope. The clout Monsanto enjoys in the U.S. government is by no means incidental. According to the Organic Consumers Association, Clarence Thomas, before being the Supreme Court Judge who put George W. Bush in office (in his first term), was a Monsanto lawyer; Anne Veneman, the U.S. Secretary of Agriculture, was on the board of directors of Monsanto's Calgene Corporation; Donald Rumsfeld, the Secretary of Defence, was on the board of directors of Monsanto's Searle Pharmaceuticals;*

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	Secretary of Health Tommy Thompson received $50,000 in donations from Monsanto during his winning campaign for Wisconsin's governorship; and the two Congressmen who received the most donations from Monsanto during the last election were Larry Combest (Chairman of the House Agricultural Committee) and John Ashcroft (the Attorney-General)." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"Concerns Over Glyphosate Use" The Sun (Malaysia), Friday August 20, 1999	Opposing View #5: *"A recent study which shows clear links between exposure to the herbicide glyphosate and non-Hodgkin's lymphoma (NHL), a form of cancer that afflicts the lymphatic system, has caused worldwide concern over the safety of the herbicide on humans.* *The study was conducted by eminent oncologists Dr Lennart Hardell and Dr Mikael Eriksson of Sweden and published in the journal Cancer by the American Cancer Society on March 15."* *"Monsanto's Argument:* *Previous evaluations conducted by the US Environmental Protection Agency (EPA) and the World Health Organization (WHO) suggest that glyphosate is not a mutagenic or carcinogenic.* *WHO and the Food and Agriculture Organization (FAQ) have approved the safety of glyphosate residues in genetically-engineered Roundup Ready soyabeans.* *PAN's Counter Argument:* *The EPA and WHO evaluations were done more than five years ago and based mainly on data submitted to them by Monsanto.* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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	literature is irrelevant to the Telegraph Vegetation Project. These evaluations did conclude that "there is no evidence of mutagenicity or carcinogenicity" based on the available data, but they do not support definitive assertions that glyphosate "is not mutagenic or carcinogenic". Previous EPA and WHO evaluations which made similar claims for other chemicals had to be revised as new evidence came to light. The establishment of the WHO's Acceptable Daily Intake (ADI) is based on limited studies using limited parameters which do not account for vulnerable groups such as children, the elderly, the sick and other groups that might have increased susceptibility to glyphosate exposure."
Kimble-Evans, Amanda "Roundup Kills more than Weeds" Mother Earth News, December 2009/January 2010	Opposing View #6*: "To protect our health, the U.S. Environmental Protection Agency (EPA) sets maximum legal residue levels for every pesticide, for dozens of crops. But a new study in the respected journal Toxicology has shown that, at low levels that are currently legal on our food, Roundup could cause DNA damage, endocrine disruption and cell death. The study, conducted by French researchers, shows glyphosate-based herbicides are toxic to human reproductive cells."* *"Solvents and surfactants, legally considered 'inert ingredients,' are mixed with glyphosate in products such as Roundup weed killer to create chemical formulations that increase mobility and more direct access to the cells. 'Those same factors that aid penetration into a plant, also aid penetration into the skin,' says Vincent Garry, professor emeritus of pathology at the University of Minnesota. 'These chemica'ls are designed to kill cells.' "* *"Herbicide manufacturers are subject to fewer rules in the testing of inert ingredients than they are for active ingredients, explains Caroline Cox, research director at the Center for Environmental Health in Oakland, Calif. 'The tests the EPA requires for inert ingredients cover only a small range of potential health problems,' Cox says. 'Testing for birth defects, cancer and genetic damage are required only on the adive ingredients. But we're exposed to both.' "* *"'Our bodies are gigantic spider webs of chemical communications that work in the parts-per-trillion range,' says Warren Porter, professor of zoology and environmental toxicology at the University of Wisconsin. 'When you put so-called 'insignificant' amounts of toxic chemicals into the mix, you have a molecular bull in a china shop. The possibilities for impact are endless.' "*

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	FS Response: There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Seralini, Gilles-Eric "Issue: Cumulative Impacts to Amphibians Species" A Laboratoire de Biochimie et Biologie Moleculaire publication, Universite de Caen, February 2006	Opposing View #7: *"The findings of Richard et al. (2005) are an important addition to our understanding that the health and environmental effects of formulated pesticide products are not fully reflected in tests conducted on the active ingredient(s) alone. It has been long known that the adjuvants (commonly and misleadingly called "inert" ingredients) may be toxic and may enhance or supplement the toxic effects of the active pesticidal ingredient.* *In the case of glyphosate-containing products, this phenomenon was well demonstrated in the data submitted to the (EPA) by the registrant (Monsanto), and summarized by the U.S. EPA in the Reregistration Eligibility Document (RED) for glyphosate (U.S. EPA 1993). For example, based on the registrant's own tests of acute toxicity to freshwater fish, the U.S. EPA classified technical grade glyphosate as "slightly toxic" to "practically non-toxic" and formulated products ranged from "moderately toxic" to "practically non-toxic." Tested alone, the surfactant adjuvant (identified as "inert") was "highly toxic" to "slightly toxic." Similar differences were reported in tests of acute toxicity to freshwater invertebrates.* *Based in part on the data in the glyphosate RED (U.S. EPA 1993), the New York State Attorney General's office successfully pursued an action against Monsanto in 1996 (Attorney General of the State of New York 1996). At that time, Monsanto was making advertising claims about the toxicity of the Roundup products based on data from tests on the active ingredient alone. Such claims are scientifically unfounded and inherently deceptive. The Attorney General's action was facilitated by the availability of at least some limited information about the inert ingredients and their toxicity. That same sort of information enabled Richard et al. (2005) to conduct their study.* *Unfortunately, that is not always the case, and for many pesticide products, little or no information about the identity of inert ingredients is publicly available. Registrants are generally required to conduct acute toxicity tests on formulated products, but they traditionally*

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	conduct chronic toxicity tests on the active ingredient alone. Even when formulated products are tested, the identity of inert ingredients is rarely revealed in the open literature, publicly available regulatory documents, or product labels. Therefore, independent research is stymied, and the public is ill-informed in the marketplace." **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Projects.
"MYTH: The Government tests pesticides for safety before they are sold" Wild Ones Journal, Nov 17, 2006	Opposing View #8: *"FACT: The EPA (Environmental Protection Agency) does not test pesticides for safety. It relies on the manufacturers' test data to make judgments. Recent probes have found that the experiments on which these data have been based, have been designed to show only what the manufacturer would like them to show. This criticism of self-serving misrepresentation can be aimed equally validly at irresponsible experimenters bent on demonstrating toxicity of a given pesticide.* *It seems that however this problem is approached, the EPA needs to take more affirmative action and responsibility. This is not likely to happen, as the EPA's research program increasingly relies on corporate joint venture, according to agency documents obtained by Public Employees for Environmental Responsibility (PEER). Indeed, a study by the Government Accountability Office (the investigative arm of Congress - the same people who first told us of the $640 toilet seats and $1,000 hammers purchased with Department of Defense money), in April 2005, concluded that the EPA lacks safeguards to "evaluate or manage potential conflicts of interest" in corporate research agreements, as they are taking money from corporations that they are supposed to be regulating."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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	literature is irrelevant to the Telegraph Vegetation Project.
"MYTH: There are laws..." Wild Ones Journal, Nov 17, 2006	Opposing View #9: *"FACT: The primary focus of the Federal Insecticide, Fungicide, and Rodenticide Act, originally enacted in 1947, was to provide federal control of pesticide distribution, sale, and use. The act has been amended many times over the years. One of these amendments permitted manufacturers protection of trade secrets. It is under these provisions that manufacturers circumvent a law that originally intended all information to be known - at least by the EPA. The fact that today, with mass spectrometers, chemistry can determine the makeup of the inert ingredients, leaves only the end consumer in the dark.* *In 1990 the Office of the Attorney General of New York filed a request that all inert ingredients in pesticides be made public. The request was repeated a number of times through the decade, to no avail. Sixteen years later, in August of 2006, the attorneys general of 14 states have filed a similar petition to the EPA. This time the EPA is obliged to respond within a given time period."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
O' Neill, Sadhbh "RoundUp-Lymphoma Connection" Genetic Concern, June 22, 1999	Opposing View #10*: "A recent study by eminent oncologists Dr. Lennart Hardell and Dr. Mikael Eriksson of Sweden [1], has revealed clear links between one of the world's biggest selling herbicide, glyphosate, to non-Hodgkin's lymphoma, a form of cancer [2]."* *"In the study published in the 15 March 1999 Journal of American Cancer Society, the researchers also maintain that exposure to glyphosate 'yielded increased risks for NHL.' They stress that with the rapidly increasing use of glyphosate since the time the study was carried out, 'glyphosate deserves further epidemiologic studies.' "* *"O' Neill concluded: 'The EPA when authorising Monsanto's field trials for Roundup-ready sugar beet did not consider the issue of glyphosate. They considered this to be the remit of the Pesticides Control Service of the Department of Agriculture. Thus nobody has included the effects of increasing the use of glyphosate in the*

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	risk/benefit analysis carried out. It is yet another example of how regulatory authorities supposedly protecting public health have failed to implement the 'precautionary principle' with respect to GMOs.' " **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Cox, Caroline. "Glyphosate, Part 1: Toxicology" Journal of Pesticide Reform, Volume 15, Number 3, Fall 1995	Opposing View #11: "*Glyphosate-containing products are acutely toxic to animals, including humans. Symptoms include eye and skin irritation, cardiac depression, gastrointestinal pain, vomiting, and accumulation of excess fluid in the lungs. The surfactant used in a common glyphosate product (Roundup) is more acutely toxic than glyphosate itself; the combination of the two is yet more toxic."* *"Tests done on glyphosate to meet registration requirements have been associated with fraudulent practices."* *"Laboratory fraud first made headlines in 1983 when EPA publicly announced that a 1976 audit had discovered "serious deficiencies and improprieties" in toxicology studies conducted by Industrial Biotest Laboratories (IBT). Problems included "countless deaths of rats and mice that were not reported," "fabricated data tables," and "routine falsification of data."* *"IBT was one of the largest laboratories performing tests in support of pesticide registrations.44 About 30 tests on glyphosate and glyphosate- containing products were performed by IBT, including 11 of the 19 chronic toxicology studies. A compelling example of the poor quality of IBT data comes from an EPA toxicologist who wrote, "It is also somewhat difficult not to doubt the scientific integrity of a study when the IBT stated that it took specimens from the uteri (of male rabbits) for histopathological examination." (Emphasis added.)* *"In 1991, laboratory fraud returned to the headlines when EPA alleged that Craven Laboratories, a company that performed contract studies for 262 pesticide companies including Monsanto, had falsified test results. "Tricks" employed by Craven Labs included "falsifying laboratory notebook entries" and "manually manipulating scientific equipment to produce false reports." Roundup residue*

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	studies on plums, potatoes, grapes, and sugarbeets were among the tests in question." *"The following year, the owner/president of Craven Laboratories and three employees were indicted on 20 felony counts. A number of other employees agreed to plead guilty on a number of related charges.50 The owner was sentenced to five years in prison and fined $50,000; Craven Labs was fined 15.5 million dollars, and ordered to pay 3.7 million dollars in restitution."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"EPA Investigates Monsanto" RACHEL'S HAZARDOUS WASTE NEWS #400, July 28, 1994	Opposing View #12: *"EPA Investigates Monsanto An internal memorandum by an official of the U.S. Environmental Protection Agency [EPA], has accused EPA of conducting a "fraudulent" criminal investigation of Monsanto, the St. Louis chemical corporation. The 30-page memo, from William Sanjour to his supervisor, David Bussard, dated July 20, 1994, describes a two-year-long criminal investigation of Monsanto by EPA's Office of Criminal Investigation (OCI).* *The Sanjour memo says EPA opened its investigation on August 20, 1990 and formally closed it on August 7, 1992. "However, the investigation itself and the basis for closing the investigation were fraudulent," the Sanjour memo says.* *According to the Sanjour memo:* *•EPA's investigation of Monsanto was precipitated by a memo dated February 23, 1990, from EPA's Dr. Cate Jenkins to Raymond Loehr, head of EPA's Science Advisory Board.* *•The Jenkins memo said that EPA had set dioxin standards relying on flawed Monsanto-sponsored studies of Monsanto workers exposed to dioxin, studies that had showed no cancer increases among heavily exposed workers.* *•Attached to the Jenkins memo was a portion of a legal brief filed by the plaintiffs as part of a trial known as Kemner v. Monsanto, in which a group of citizens in Sturgeon, Missouri had sued Monsanto for alleged*

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	injuries they had suffered during a chemical spill caused by a train derailment in 1979. *•The Jenkins memo had not requested a criminal investigation; instead Jenkins had suggested the need for a scientific investigation of Monsanto's dioxin studies. But in August 1990, EPA's Office of Criminal Investigation (OCI) wrote a 7-page memo recommending that a "full field criminal investigation be initiated by OCI."* *•Plaintiffs in the Kemner suit made the following kinds of allegations (which we quote verbatim from the Sanjour memo):* *"Monsanto failed to notify and lied to its workers about the presence and danger of dioxin in its chlorophenol plant, so that it would not have to bear the expense of changing its manufacturing process or lose customers; ...* *"Monsanto knowingly dumped 30 to 40 pounds of dioxin a day into the Mississippi River between 1970 and 1977 which could enter the St. Louis food chain;* *"Monsanto lied to EPA that it had no knowledge that its plant effluent contained dioxin;* *"Monsanto secretly tested the corpses of people killed by accident in St. Louis for the presence of dioxin and found it in every case;...* *"Lysol, a product made from Monsanto's Santophen, was contaminated with dioxin with Monsanto's knowledge." [The Sanjour memo says that, at the time of the contamination, "Lysol (was) recommended for cleaning babies' toys and for other cleaning activities involving human contact."]* *"The manufacturer of Lysol was not told about the dioxin by Monsanto for fear of losing his business;* *"Other companies using Santophen, who specifically asked about the presence of dioxin, were lied to by Monsanto;...* *"Shortly after a spill in the Monsanto chlorophenol plant, OSHA measured dioxin on the plant walls. Monsanto conducted its own measurements, which were higher than OSHA's, but they issued a press release to the public and they lied to OSHA and their workers saying they had failed to confirm OSHA's findings;* *"Exposed Monsanto workers were not told of the presence of dioxin and were not given protective clothing even though the company was aware of the dangers of dioxin;* *"Even though the Toxic Substances Control Act requires chemical companies to report the presence of hazardous substances in their products to EPA, Monsanto never gave notice and lied to EPA in reports;*

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	"At one time Monsanto lied to EPA saying that it could not test its products for dioxin because dioxin was too toxic to handle in its labs."... **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Cheeseman, Gina-Marie, "Can A Company That Makes Roundup Be Sustainable?" TriplePundit, November 20th, 2009	Opposing View #13: *"A study by French researchers at the University of Caen of glyphosate residue discovered that the inert ingredients in the herbicide (solvents, preservatives, surfactants) increased the toxic effect on human cells.* *According to the researchers, glyphosate residue can cause birth defects. "This clearly confirms that the [inert ingredients] in Roundup formulations are not inert," wrote the study authors. "Moreover, the proprietary mixtures available on the market could cause cell damage and even death [at the] residual levels" found on Roundup-treated crops."* *"Another study by Argentine scientists also found that glyphosate can cause birth defects at doses considerably lower than what is commonly used on crops, in this case, soybeans. The researchers injected amphibian embryo cells with glyphosate diluted to a concentration 1,500 times less than what is used commercially. The embryos grew into tadpoles with obvious birth defects."* *"A 2001 study by Swedish oncologists discovered links between non-Hodgkin's lymphoma and glyphosate. The Swedish researchers found that Swedish people with non-Hodgkin's lymphoma were 2.3 times more likely to be exposed to glyphosate.* *Monsanto spokesperson John Combest defended the safety of Roundup. "Roundup has one of the most extensive human health safety and environmental data packages of any pesticide that's out there. It's used in public parks, it's used to protect schools. There's been a great deal of study on Roundup, and we're very proud of its performance."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on

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"MONSANTO RoundUp (glyphosate) Empire causes BIRTH DEFECTS ...in amphibian embryos, humans?" Portland independent media center, May 3, 2009	Opposing View #14: *"Over twenty years ago, the dangers of Monsanto's glyphosate as well as its associated GMOs were known scientifically to cause human health difficulties and Swedish researchers years ago in the Journal 'Cancer' noted glyphosate was connected to human cancer. Anyway, many scientists and public health workers researching it were fired. It's a mad empire's rush--the U.S empire and its corporate proxies--to desire (hell, the reality of) to own the world's food and dominate the whole world. It is destroying thousands of years of biodiversity security in the process. And Monsanto's empire of glyphosate is in virtually everything in the USA and worldwide. One foolish company, one corrupt federal government of the USA. Everyone should learn more about Monsanto in the film "The World According to Monsanto." (90 minutes). Monsanto's corporate contract should be revoked for endangering world health and killing off global crop biodiversity of thousands of years of work destroyed in one generation--in the mad rush to dominate the whole world's biodiversity.* *Monsanto and the USA will go down in history as the organizations that caused most biological devastation and human suffering in human history."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Valente, Marcela "Scientists Reveal Effects of Glyphosate" HEALTH-ARGENTINA, April 15 , 2009	Opposing View #15: *"BUENOS AIRES, Apr 15 , 2009 (IPS) - Glyphosate, the herbicide used on soybeans in Argentina, causes malformations in amphibian embryos, say scientists here who revealed the findings of a study that has not yet been published."* *"The observed deformations are consistent and systematic," Professor Andres Carrasco, director of the Laboratory of Molecular Embryology at the University of Buenos Aires medical school and lead researcher on the*

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	National Council of Scientific and Technical Research (CONICET), told the Inter Press Service news agency IPS. *Reduced head size, genetic alterations in the central nervous system, an increase in the death of cells that help form the skull, and deformed cartilage were effects that were repeatedly found in the laboratory experiments, said the biologist.* *The news was reported Monday by the Argentine newspaper Pagina 12.* *Monsanto's head of communications in Argentina, Fernanda Perez Cornetta, told IPS that the company has "several studies that show that the herbicide is harmless to humans, animals and the environment."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Watts, Meriel Ph.D. "Roundup's Not OK" ORGANIC NZ, November/December 2009	Opposing View #16: *"It's amazing how many organics people still think it's OK to just use a bit of Roundup on those weeds in the bush or the driveway, or .... of course, not on the food, but the bush, that's OK isn't it?* *Well, no, actually it isn't, and here's why: Roundup and various other formulations of the active ingredient glyphosate, have the potential to cause serious health and environmental effects, and have caused some severe poisoning problems.* *Thorough PR by the developer of Roundup, Monsanto, has resulted in the widespread belief that glyphosate is 'safe'. Registration processes have generally supported this attitude, and there are no national or international bans. However, independent scientific studies and widespread poisonings in Latin America resulting from aerial application are beginning to reveal the true effects of the world's most widely used herbicide."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS

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	(2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"Do Seed Companies Control GM Crop Research?" Scientific American, Editorial, August 2009 edition, published 21 July 2009	Opposing View #17: *"Research on genetically modified seeds is still published, of course. But only studies that the seed companies have approved ever see the light of a peer-reviewed journal. In a number of cases, experiments that had the implicit go-ahead from the seed company were later blocked from publication because the results were not flattering. "It is important to understand that it is not always simply a matter of blanket denial of all research requests, which is bad enough," wrote Elson J. Shields, an entomologist at Cornell University, in a letter to an official at the Environmental Protection Agency (the body tasked with regulating the environmental consequences of genetically modified crops), "but selective denials and permissions based on industry perceptions of how 'friendly' or 'hostile' a particular scientist may be toward [seed-enhancement] technology."* *Shields is the spokesperson for a group of 24 corn insect scientists that opposes these practices. Because the scientists rely on the cooperation of the companies for their research - they must, after all, gain access to the seeds for studies - most have chosen to remain anonymous for fear of reprisals. The group has submitted a statement to the EPA protesting that "as a result of restricted access, no truly independent research can be legally conducted on many critical questions regarding the technology."* *It would be chilling enough if any other type of company were able to prevent independent researchers from testing its wares and reporting what they find - imagine car companies trying to quash head-to-head model comparisons done by Consumer Reports, for example. But when scientists are prevented from examining the raw ingredients in our nation's food supply or from testing the plant material that covers a large portion of the country's agricultural land, the restrictions on free inquiry become dangerous.* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.

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France Finds Monsanto Guilty of Lying, lnfowars Ireland, November 23, 2009	Opposing View #18: *"France's highest court has ruled that U.S. agrochemical giant Monsanto had not told the truth about the safety of its best-selling weed-killer, Roundup. The court confirmed an earlier judgment that Monsanto had falsely advertised its herbicide as "biodegradable" and claimed it "left the soil clean." Roundup is the world's best-selling herbicide.* *French environmental groups had brought the case in 2001 on the basis that glyphosate, Roundup's main ingredient, is classed as "dangerous for the environment" by the European Union.* *In the latest ruling, France's Supreme Court upheld two earlier convictions against Monsanto by the Lyon criminal court in 2007, and the Lyon court of appeal in 2008, the AFP news agency reports.* *Monsanto already dominates America's food chain with its genetically modified seeds. Now it has targeted milk production. Just as frightening as the corporation's tactics, including ruthless legal battles against small farmers, is its decades-long history of toxic contamination."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Projects.
Damato, Gregory Ph.D., "GM-Soy: Destroy the Earth and Humans for Profit" Fourwinds10.com, May 27, 2009	Opposing View #19: *"Monsanto created Roundup in the 1970's to kill weeds and has since catapulted this product to be the world's number one selling herbicide. Before the patent on Roundup was set to expire in 2000, Monsanto needed a surefire way to keep the profits of Roundup from bottoming out. Monsanto quickly began purchasing the majority of the world's seed companies while simultaneously creating GMOs that farmers needed to sign contractual agreements to only use Roundup. Subsequently, revenue from Roundup never dropped and in fact topped more than $4 billion in 2008, up 59°/o from 2007 [2].* *GM-soy is estimated to be present in up to 70o/o of all food products found in US supermarkets, including cereals, breads, soymilk, pasta and most meat (as animals are fed GM-soy feed). Although Monsanto has consistently relied on industry-funded data to declare the*

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	safety of GM-soy and glyphosate, objective research published in peer-reviewed journals tells another story. *Toxicity of Glyphosate* *A recently published study by Italian researchers [3] examined the toxicity of four popular glyphosate based herbicide formulations on human placental cells, kidney cells, embryonic cells and neonate umbilical cord cells and surprisingly found total cell death of each of these cells within 24 hours. The researchers reported several mechanisms by which the herbicides caused the cells to die including: cell membrane rupture and damage, mitochondrial damage and cell asphyxia. Following these findings, the researchers tested G, AMPA and POEA by themselves and concluded that, "It is very clear that if G, POEA, or AMPA has a small toxic effect on embryonic cells alone at low levels, the combination of two of them at the same final concentration is significantly deleterious."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
"Everything you Never Wanted to Know about Monsanto's Modus Operandi (M.O.)" Mindfully.org	Opposing View #20: *"If you're still not convinced that Roundup is a highly toxic and persistent pesticide, read on, while at the same time remembering the other contributions that Monsanto has made to society such as:* *Saccharin, Astroturf, agent orange, dioxin, sulphuric acid, polychlorinated biphenyls (PCBs), plastics and synthetic fabrics, research on uranium for the Manhattan Project that led to the construction of nuclear bombs, styrene monomer, an endless line of pesticides and herbicides (Roundup), rBGH (recombinant bovine growth hormone that makes cows ill), genetically engineered crops (corn, potatoes, tomatoes, soy beans, cotton), and it's most significant product to date; Lies, Factual Distortions and Omissions. Here's one of the distortions that Monsanto had on its website a while back. 'Sustainability - the idea that the resources and people of this world are finite. That for any business decision we make, we must consider the effect it will have on us and our children. That the products we make must not use up all of a natural resource, or even worse, contaminate what is left behind.' "*

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Gillam, Carey "Patents Trump Public Interest in Monsanto's Ag Empire - Special Report: Are Regulators Dropping the Ball on Biocrops?" Reuters, April 13, 2010	Opposing View #21: *""The U.S. response (to questions about biotech crop safety) has been an extremely patronizing one. They say 'We know best, trust us,"' added Gurian-Sherman, now a senior scientist at the Union of Concerned Scientists, a nonprofit environmental group."* *"So far, that confidence has been lacking. Courts have cited regulators for failing to do their jobs properly and advisers and auditors have sought sweeping changes."* *"The developers of these crop technologies, including Monsanto and its chief rival DuPont, tightly curtail independent scientists from conducting their own studies. Because the companies patent their genetic alterations, outsiders are barred from testing the biotech seeds without company approvals."* *"The agreements disallow any research that is not first approved by the companies. "No truly independent research can be legally conducted on many critical questions regarding the technology," the scientists said in their statement."* *"Outside researchers have also raised concerns over the years that glyphosate use may be linked to cancer, miscarriages and other health problems in people."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Rossol, Monona, Ph.D. "Say What? A Chemical Can Damage Your Lungs, Liver and Kidneys and Still Be Labeled "Non-Toxic"?" Ms. Rossol is a research chemist, author and member of the	Opposing View #22: *"Defining Toxic Asbestos is an extreme example, which I use here and in my book Pick Your Poison: How Our Mad Dash to Chemical Utopia is Making Lab Rats of Us All to make a point, but many other "nontoxic" products could be full of toxic chemicals.*

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American Industrial Hygiene Association,May 9, 2011	*I'm hoping this essay leaves you with a general distrust of the nontoxic label, both in the past and currently. When you see "nontoxic" on a product, keep the following facts in mind:* *•"Nontoxic" can still legally mean that there are no immediate, acute hazards as determined by the LOSO and LC50 tests.* *•"Nontoxic" may mean there are little or no chronic data available on the substance. If the substance is not acutely toxic, and one can't prove it is toxic in the long term, many manufacturers feel that they have the right to call it nontoxic. Even if there are studies showing that the substance is toxic, manufacturers in the United States have traditionally waited for absolute, unequivocal proof, which in most cases is never available because we don't study our chemicals.* *•An art material is "nontoxic" if a toxicologist paid by the manufacturer decides it is safe. The dramatic failure in this labeling procedure was illustrated with the lead ceramic glazes and asbestos-containing materials such as talc. Asbestos-containing talcs are still found in some art and craft materials today.* *Some art materials that have never been evaluated by a toxicologist may be labeled "nontoxic" illegally due to weak enforcement of the art materials labeling law. For example, in 1995, a cameraman and a reporter from Channel 9 in New York went with me to a major art materials outlet. That night on the evening news, we showed viewers about a dozen imported products that did not conform to the law, some labeled "nontoxic," which were being sold illegally. This is still true today, and a little research will lead you to many sources of noncompliant "nontoxic" products.* *•Labeling of ordinary consumer products is pretty much up to the manufacturer and its paid advisers. Because there is no enforcement mechanism in the regulations for the chronic hazard labeling of ordinary consumer products, there is not much incentive to provide warnings.* *•There is no regulatory requirement to warn consumers about damage to most of the body's organs, such as the lungs, the liver, and the kidneys. Only four types of chronic hazards are covered by the Federal Hazardous Substances Act regulations. These are cancer, and developmental, reproductive, and neurological damage."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on

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PAN UK "Resistance to glyphosate" This data was first published in Pesticides News No. 41, September 1998, page 5	Opposing View #23: *Monsanto's Claims:* *•Roundup has a low irritational potential for eye and skin and otherwise is not a risk to human health.* *• Roundup does not cause any adverse reproductive effects* *• Roundup is not mutagenic in mammals.* *• Roundup is environmentally safe.* *• Roundup is rapidly inactivated in soil and water.* *• Roundup is immobile and does not leach from soils.* *• Roundup does not contaminate drinking water when used by local authorities on hard surfaces.* *• It is nearly impossible for glyphosate resistance to evolve in weeds.* *• Outcrossing in oilseed rape crops (and the transfer of genes from transgenic crops) occurs over a short distance and can be easily managed.* *• Roundup Ready crops will reduce levels of herbicide use.* *Independent Research Findings:* *• Roundup is amongst the top most reported pesticides causing poisoning incidents (mainly skin irritation) in several countries. It also causes a range of acute symptoms including, recurrent eczema, respiratory problems, elevated blood pressure, allergic reactions.* *• In laboratory tests on rabbits glyphosate caused long lasting, harmful effects on semen quality and sperm counts.* *• DNA damage has been observed in laboratory experiments in mice organs and tissue.* *• In the agricultural environment, glyphosate is toxic to some beneficial soil organisms, beneficial arthropod predators, and increases crops' susceptibility to diseases.* *• Sub-lethal doses of glyphosate from spray drift damages wildflower communities and can affect some species up to 20 metres away from the sprayer.* *• The use of glyphosate in arable areas may cause dieback in hedgerow trees.* *• Glyphosate is very persistent in soils and sediments.*

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	• *Glyphosate inhibited the formation of nitrogen fixing nodules on clover for 120 days after treatment.* • *Glyphosate residues were found in lettuce, carrot, and barley when planted a year after glyphosate was applied.* • *Glyphosate can readily desorb from soil particles in a range of soil types. It can be extensively mobile and leach to lower soil layers.* • *Glyphosate can be carried by soil particles suspended in run off.* • *In the UK, levels of glyphosate above the EU limit have been detected by the Welsh Water Company every year since 1993. The Drinking Water Inspectorate recommends that glyphosate be monitored, particularly, in areas where it is used by local authorities on hard surfaces.* • *In 1996, glyphosate resistant ryegrass was discovered in Australia.* • *The densities of oil seed rape pollen are much higher and their dispersal patterns differ from around large fields compared to those found in experimental plots. Wind dispersal of pollen occurs over much greater distances and at higher concentrations than predicted by experimental plots. Significant levels of gene flow from transgenic oil seed crops is inevitable.* • *Herbicide resistant crops will intensify and increase dependency on herbicide use in agriculture rather than lead to any significant reductions. A variety of herbicides will have to be reintroduced to control glyphosate resistant volunteers, feral populations of crops and resistant weeds.* *Source: References cited in Health and Environmental Impacts of Glyphosate, (Details available from the Pesticides Trust[now PAN UK]).* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Schafer, Kristin, "Mother takes on Monsanto, wins global prize" Published in GroundTruth, April 13, 2012, Pesticide Action Network North America	Opposing View #24: *"When Sofia lost her newborn, she soon realized that such losses were all- too-common in her small community of ltuzaing6 Annex. Aerial spraying with Monsanto's herbicide Roundup had climbed dramatically*

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	in the region as the number of acres planted with the company's "RoundUp Ready" soy crops grew. *Sofia and other concerned mothers went door to door collecting stories about health problems in each family - basically conducting the community's first-ever epidemiological study. "The Mothers of ltuzaing6" discovered the community's cancer rate to be 41 times the national average, and rates of neurological problems, respiratory diseases and infant mortality were astonishingly high. In response, the mothers launched a "Stop the Spraying!" campaign."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Moench, Brian, MD., "The Autism Epidemic and Disappearing Bees: A Common Denominator?" Published in Truthout, April 21, 2012	Opposing View #25*: "But humans are much bigger than insects and the doses to humans are miniscule, right? During critical first trimester development, a human is no bigger than an insect, so there is every reason to believe that pesticides could wreak havoc with the developing brain of a human embryo. But human embryos aren't out in corn fields being sprayed with insecticides and herbicides, are they? A recent study showed that every human tested had the world's most popular pesticide, Roundup, detectable in their urine at concentrations between five and twenty times the level considered safe for drinking water.* *The autism epidemic and the disappearance of bees are just two of many self-imposed disasters from allowing our world, including Utah, to be overwhelmed by environmental toxins. Environmental protection- including the smallest and most vulnerable among us - is human protection."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This

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	literature is irrelevant to the Telegraph Vegetation Project.
Barrett, Mike, "Monsanto's Roundup Ready Crops Leading to Mental Illness, Obesity" Natural Society, December 15, 2011	Opposing View #26: *"A formula seems to have been made to not only ruin the agricultural system, but also compromise the health of millions of people worldwide. With the invent of Monsanto's Roundup Ready crops, resistant superweeds are taking over farmland and public health is being attacked. These genetically engineered crops are created to withstand large amounts of Monsanto's top-selling herbicide, Roundup. As it turns out, glyphosate, the active ingredient in Roundup, is actually leaving behind its residue on Roundup Ready crops, causing further potential concern for public health."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Jill Richardson, "Monsanto controls our food, poisons our land, and influences all three branches of government." Alternet, April 18, 2013	Opposing View #27: "*Asked about the harmlessness of Roundup, Lovera replies, "That's the PR behind Roundup - how benign it was and you can drink it and there's nothing to worry about here. There are people who dispute that." For example there is an accusation that Roundup causes birth defects. "We don't buy the benign theory," continues Lovera, "But what's really interesting is that we aren't going to be having this conversation pretty soon because Roundup isn't working anymore."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Projects.
Carey Gillam, "Heavy use of herbicide Roundup linked to health dangers-U.S. study" Reuters, April 25, 2013	Opposing View #28: *"Heavy use of the world's most popular herbicide, Roundup, could be linked to a range of health problems and diseases, including Parkinson's, infertility and cancers, according to a new study.*

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	The peer-reviewed report, published last week in the scientific journal Entropy, said evidence indicates that residues of "glyphosate," the chief ingredient in Roundup weed killer, which is sprayed over millions of acres of crops, has been found in food. *Those residues enhance the damaging effects of other food-borne chemical residues and toxins in the environment to disrupt normal body functions and induce disease, according to the report, authored by Stephanie Seneff, a research scientist at the Massachusetts Institute of Technology, and Anthony Samsel, a retired science consultant from Arthur D. Little, Inc. Samsel is a former private environmental government contractor as well as a member of the Union of Concerned Scientists."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Project.
Zerbe, Leah, "Monarchs and Glyphosate: Will EPA Take Action to Save Butterflies?" Rodale News, February 26, 2014	Opposing View #29*: "These beautiful and unique creatures have long fascinated biologists and schoolchildren alike," says Sylvia Fallon, an NRDC senior scientist. "Their precipitous loss signals a warning about the unintended consequences of our industrial agricultural practices. We need to act quickly to ensure that future generations will also be able to experience the wonder of the monarch's migration." Although milkweed may sound like a pesky weed, it's actually a native plant that nature intended to be here. Monarch butterfly larvae depend on this plant species for their survival."* **FS Response:** There is no proposal to apply herbicides with this project; only design measures to reduce the spread of weeds. Any spraying for weeds would be consistent with the Helena National Forest Noxious Weed Treatment Project EIS (2006). For further information on herbicide use on the Forest please see the Helena National Forest Noxious Weed Treatment Project EIS (2006) located in the Telegraph project record. This literature is irrelevant to the Telegraph Vegetation Projects.

Telegraph Vegetation Project
Review of References Cited in Comments to the Environmental Impact Statement

Attachment #11
Dick Artley
"Caring USFS Officials will Always Take the Most Effective Action Available to Reduce the Risk Of Homes Burning and Loss of Life should a Wildfire Start Near Neighborhoods Located in the Woods

Not Analyzing an Alternative in Detail that Applies Dr. Cohen's Fine Fuels Removal Methods Discussed below Indicates the Responsible USFS Official Believes Timber Removal resulting from Hazardous Fuels Reduction Logging is more Important than Preventing Homes from Burning"

Author/Date/Title	Response to literature cited in opposing views
Cohen, J. D. 2001. Wildland-urban fire—a different approach. *Proceedings of the Firefigther Safety Summit, International Association of Wildland Fire, Missoula, MT, November*, 6-8.	Opposing View #1: *"Research results indicate that the home and its immediate surroundings within 100-200 feet (30-60 meters) principally determines the home ignition potential during severe wildland-urban fires. Research has also established that fire is an intrinsic ecological process of nearly all North American ecosystems. Together, this understanding forms the basis for a compelling argument for a different approach to addressing the wildland-urban fire problem." (Pg. 1 – abstract)* **FS Response:** When referring to direct home ignitability, we concur with Dr. Cohen's research cited in the commenter's letter. However, the loss of structures on private property is also a function of fire behavior far away from these structures that may be National Forest System lands. Dr. Cohen published research (Cohen 1999 and Cohen 2000, both citations found in the Literature Cited section of the EIS) regarding the benefits of reducing the intensity of wildland fire and the firebrands that are generated from those fires. Firebrands can have a substantial effect on firefighter's ability in controlling wildland fires. The Forest Service is managing National Forest System lands to mitigate hazards and enhance the ability to control fires within the wildland urban interface. Still, the primary and ultimate responsibility for home wildfire protection lies with private homeowners, not public land management agencies (or taxpayers). The National Fire Protection Association's (NFPA) Firewise communities program encourages local solutions for wildfire safety by involving homeowners, community leaders, planners, developers, firefighters, and others in the effort to protect people and property from wildfire risks. The program is co-sponsored by the USDA Forest Service, the U.S. Department of the Interior, and the National Association of State Foresters.

Author/Date/Title	Response to literature cited in opposing views
Cohen, Jack. 1999. Reducing the Wildland Fire Threat to Homes: Where and How Much? USDA-FS PSW-GTR-173 1999.	Opposing View #2: *"A senior physicist at the Stanford Research Institute, C.P. Butler (1974), coined the term "urban-wildland interface" and described this fire problem as follows:* *"In its simplest terms, the fire interface is any point where the fuel feeding a wildfire changes from natural (wildland) fuel to man-made (urban) fuel." (Pg. 1)* Opposing View #3: *"The results of the diverse analytical methods are congruent and consistently indicate that ignitions from flames occur over relatively short distances--tens of meters not hundreds of meters. The severe-case estimate of SIAM indicates distances of 40 meters or less. Experimental wood walls did not ignite at 10 meters when exposed to experimental crown fires. And, case studies found that vegetation clearance of at least 10 meters was associated with a high occurrence of home survival." (Pg. 4)* Opposing View #4: *"Analyses of southern California home losses done by the Stanford Research Institute for the 1961 Belair-Brentwood Fire (Howard and others 1973) and by the University of California, Berkeley, for the 1990 Painted Cave Fire (Foote and Gilless 1996) are consistent with SIAM estimates and the experimental crown fire data. Given nonflammable roofs, Stanford Research Institute (Howard and others 1973) found a 95 percent survival with a clearance of 10 to 18 meters and Foote and Gilless (1996) at Berkeley, found 86 percent home survival with a clearance of 10 meters or more." (Pgs. 3 and 4)* Opposing View #5: *"Extensive wildland vegetation management does not effectively change home ignitability." (Pg. 5)* Opposing View #6: *"Home ignitability also dictates that effective mitigating actions focus on the home and its immediate surroundings rather than on extensive wildland fuel management. Because homeowners typically assert their authority for the home and its immediate surroundings, the responsibility for effectively reducing home ignitability can only reside with the property owner rather than wildland agencies." (Pg. 5)* Opposing View #7: *"As stated, the evidence indicates that home ignitions depend on the home materials and design and only those flammables within a few tens of meters of the home (home ignitability). The wildland fuel characteristics beyond the home site have little if any significance to WUI home fire losses." (Pg. 5)* Opposing View #8: *"Home ignitability implies that homeowners have the ultimate responsibility for WUI home fire loss potential. As shown, the ignition and flammability characteristics of a structure and its immediate surroundings determine the home fire loss potential. Thus, the home should not be considered a victim of wildland fire, but rather a potential participant in the continuation of the wildland fire. Home ignitability, i.e., the potential for WUI home fire loss, is the homeowner's choice and responsibility." (Pg. 5)* Opposing View #9*: "However, public and management perceptions may impede homeowners from taking principal*

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	responsibility. For example, the Federal Wildland Fire Management, Policy and Program Review (1995) observes, 'There is a widespread misconception by elected officials, agency managers, and the public that wildland/urban interface protection is solely a fire service concern.' In a Journal of Forestry article, Beebe and Omi (1993) concur, stating that, 'Public reaction to wildfire suggests that many Americans want competent professionals to manage fire flawlessly, reducing the risks to life, property, and public lands to nil.' These statements agree with Bradshaw's (1988) description of the societal roles in the WUI problem. He observes that homeowners expect that fire protection will be provided by others. Contrary to these expectations for fire protection, the fire services have neither the resources for effectively protecting highly ignitable homes during severe WUI fires, nor the authority to reduce home ignitability." (Pg. 6) **FS Response:** The opposing views associated with Cohen 1999 are of the same nature and scope as the previous opposing view found above. Please see the response to opposing view #1.
Cohen, Jack and Saveland, Jim. 1997. Structure Ignition Assessment can Help Reduce Fire Damages in the WUI. Published in Fire Management Notes, Volume 57 No. 4, 1997, pg. 19-23.	Opposing View #10: *"Vegetation management beyond the structure's immediate vicinity has little effect on structure ignitions. That is, vegetation management adjacent to the structure would prevent ignitions from flame exposure; but vegetation management away from the structure would not affect ignition from flame exposure and would not significantly reduce ignitions from firebrands." (Pg. 4)* Opposing View #11: *"Past reports and recommendations as well as experimental research and modeling suggest that W-UI fire-loss mitigation should concentrate on the residence and its immediate surroundings. Any strategy for effectively reducing the W-UI fire problem must initially focus on residential fire resistance." (Pg. 5 – Conclusion)* Opposing View #12: *"Instead of all fire protection responsibilities residing with fire agencies, homeowners take responsibility for assuring firewise conditions and the initial fire defense of their residences during wildland fires. The fire agencies become a community partner that provides information, coordinates and assists in meeting firewise requirements, and provides fire suppression assistance." (Pg. 5)* **FS Response:** The National Fire Protection Association's (NFPA) Firewise communities program encourages local solutions for wildfire safety by involving homeowners, community leaders, planners, developers, firefighters, and others in the effort to protect people and property from wildfire risks. The program is co-sponsored by the USDA Forest Service, the U.S. Department of the Interior, and the National Association of State Foresters. The Forest Service does not have authority to directly perform fuel reduction activities on private property. However, the Forest Service does contribute financially to programs that provide grants for individuals to perform fuel reduction on their private property.

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	In Montana, the Forest Service is a sponsor of the Firesafe Montana program by providing funds to the Montana Department of Natural Resources and Conservation. These funds are typically distributed in the form of matching grants through local Resource and Conservation Development districts to the landowner. The landowner is required to contribute at least 50 percent of the resources needed to complete the approved fuel reduction activities. Please also see the response to opposing view #1.
Cohen, J.D. "Examination of the Home Destruction in Los Alamos Associated with the Cerro Grande Fire July 10, 2000. USDA RMRS, Missoula MT	Opposing View #13: *"My examination suggests that the abundance and ubiquity of pine needles, dead leaves, cured vegetation, flammable shrubs, wood piles, etc. adjacent to, touching and or covering the homes principally contributed to the residential losses." (Pg. 4)* **FS Response:** Focusing on the home ignition zone's pine needles, dead leaves, cured vegetation, flammable shrubs, wood piles, etc. adjacent to, touching and/ or covering the home is essential; however, lofted firebrands from adjacent forest fuels are also a principle ignition factor. Highly ignitable homes can ignite during wildland fire without a fire spreading near the structure. This occurs when firebrands are lofted downwind from fires. The firebrands subsequently collect on and ignite flammable home materials (such as roofs) and adjacent flammables (such as woodpiles, decking, and landscaped vegetation). Firebrands that result in ignitions can originate from wildland fires that are a distance of 1 kilometer (0.6 mile) or more (Cohen, 2000.) The opposing view associated to Dr. Cohen is of the same nature and scope as the previous opposing views found above. Please see the responses to all the opposing views above.
Cohen, J.D. The Wildland-Urban Interface Fire Problem: A Consequence of the Fire Exclusion Paradigm. Forest History Today, Fall 2008.	Opposing View #14: *"The wildland fire management approach for preventing WUI fire disasters largely addresses the wildfire outside the home ignition zone rather than a home's ignition potential as determined by the conditions within the home ignition zone. Since 2000, agency fire management policy initiatives have emphasized fire suppression." (Pg. 24)* Opposing View #15: *"Preventing WUI fire disasters requires that the problem be framed in terms of home ignition potential. Because this principally involves the home ignition zone, and the home ignition zone primarily falls within private ownership, the responsibility for preventing home ignitions largely falls within the authority of the property owner. Preventing wildfire disasters thus means fire agencies helping property owners mitigate the vulnerability of their structures. The continued fire management focus on fire suppression suggests the WUI fire problem persists largely as a consequence of framing the WUI fire problem primarily in terms of the fire exclusion paradigm." (Pg. 25)*

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	Opposing View #16: *"The continued focus on fire suppression largely to the exclusion of alternatives that address home ignition potential suggests a persistent inappropriate framing of the WUI fire problem in terms of the fire exclusion paradigm." (Pg. 25)* **FS Response:** The opposing views associated to Dr. Cohen are of the same nature and scope as the previous opposing views found above. Please see the responses to all the opposing views above.
Cohen, J.D. Thoughts on the Wildland-Urban Interface Fire Problem. International Journal of Wildland Fire. June 2003.	Opposing View #17: *"For the same reason, mitigating home ignition potential during extreme wildland fires must focus activities within and immediate to the residential area, i.e. the home ignition zone. But the home ignition zone largely corresponds to private property. Thus, with minor exception, the authority for effectively reducing the home ignition potential belongs to homeowners. Public land management agencies can facilitate homeowner mitigations and these agencies may be able to reduce fire intensities and the extent of burning around communities. But these agencies cannot accomplish the necessary and sufficient actions necessary to prevent residential fire disasters during extreme fire conditions by treating beyond the home ignition zone." (Pg. 2)* **FS Response:** The opposing view associated to Dr. Cohen is of the same nature and scope as the previous opposing views found above. Please see the responses to all the opposing views above.
Cohen, J.D., Johnson, Nan and Walther, Lincoln. Saving Homes from Wildfires: Regulation the Home Ignition Zone. Published in Zoning News, May 2001.	Opposing View #18: "A home with its immediate surroundings (about 100-150 feet from the structure) is called the Home Ignition Zone. Many factors about the HIZ determine the potential for ignition during a wildland fire, such as flammable wood roofs and materials like trees, grass, decks, or adjacent structures leading up to a home." (Pg. 1) **FS Response:** The opposing view associated to Cohen et. al 2001 is of the same nature and scope as the previous opposing views found above. Please see the responses to all the opposing views above.
Cohen, Jack. What is the Wildland Fire Threat to Homes? Presented as the Thompson Memorial Lecture, April 10, 2000, NAU Flagstaff AZ.	Opposing View #19: *"SIAM calculations indicate that large wildland flame fronts (e.g., forest crown fires) will not result in piloted wood ignitions (e.g., the typical variety of exterior wood walls) at distances greater than 40 meters (Cohen and Butler [In press])." (Pg. 4)* Opposing View #20: *"Field studies conducted during the International Crown Fire Modeling Experiment (Alexander et al. 1998) provided measured data for comparisons with SIAM model estimates. Total heat transfer (radiation and convection) and ignition data were obtained from heat flux sensors placed in wooden wall sections. The instrumented walls were located on flat, cleared terrain at 10, 20, and 30 meters downwind from the edge of the forested plots. The forest was variably composed of an overstory of jack pine (Pinus banksiana) about 13 meters high with an*

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	understory of black spruce (Picea mariana). The spreading crown fire produced flames approximately 20 meters high." (Pg. 5) Opposing View #21: *"Five burns were conducted where wall sections were exposed to a spreading crown fire. As the crown fires reached the downwind edge of the plot, turbulent flames extended into the clearing beyond the forest edge. In two of the five burns, flames extended beyond 10 meters to make contact with the wall section placed at 10 meters from the forest edge. When flame contact occurred, the walls ignited; however, without flame contact, only scorch occurred. The wooden panels at 20 and 30 meters never ignited and the panel at 30 meters never scorched." (Pg. 6)* Opposing View #22: *"Case studies of actual W-UI fires provide an independent comparison with SIAM and the crown fire experiments. The actual fires incorporate a wide range of fire exposures. The case studies chosen examine significant factors related to home survival for two fires that destroyed hundreds of homes. The Bel Air fire resulted in 484 homes destroyed (Howard et al. 1973) and the Painted Cave fire destroyed 479 homes (Foote 1994). Analyses of both fires indicate that home ignitions depend on the characteristics of a home and its immediate surroundings. Howard et al. (1973) observed 95 percent survival for homes with nonflammable roofs and a vegetation clearance of 10 to 18 meters. Foote (1994) observed 86 percent survival for homes with nonflammable roofs and a clearance of 10 meters or more." (Pg. 7)* Opposing View #23: *"The high survival rate for homes with nonflammable roofs and 10-20 meter vegetation clearances included firebrands as an ignition factor, thus indicating that firebrand ignitions also depend on the ignition characteristics of the home and the adjacent flammable materials." (Pg. 8)* Opposing View #24: *"Wildland fuel reduction beyond the home ignition zone does not necessarily change home ignitability; therefore, wildland fuel reduction does not necessarily mitigate the W-UI fire loss problem." (Pg. 9)* Opposing View #25: *"Effective landscape fuel reduction does not necessarily prevent W-UI home fire destruction." (Pg. 10)* Opposing View #26: *"Fire losses depend on home ignitions and home ignitions depend on home ignitability. Thus, home ignitability, being limited to a home and its immediate surroundings, offers us the opportunity to separate the W-UI structure fire loss problem from other landscape-scale fire management issues. This conclusion has significant implications for the actions and responsibilities of homeowners and fire agencies, such as identifying and mapping the potential for W-UI residential fire destruction, identifying appropriate and effective mitigating actions, and determining who should take responsibility for home ignitability." (Pg. 10)* Opposing View #27: *"Thus, wildland fuel reduction that is effective for reducing the wildland fire intensity might be insufficient for reducing the destruction of highly ignitable homes. In contrast, a low home ignition potential reduces the chances of fire destruction*

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	without extensive wildland fuel reduction. These findings indicate that the W-UI home fire loss problem is a home ignitability issue largely independent of landscape fuel reduction issues." (Pg. 10) Opposing View #28: *"The extent of the home ignition zone corresponds more to specific home and community ownership than to the landscapes of federal, state and local land management agencies. This suggests a corresponding responsibility for W-UI home fire loss potential residing with homeowners and communities. Thus, the home should not be considered a victim of wildland fire, but rather a potential participant in the continuation of the wildland fire. Home ignitability, i.e., the potential for W-UI home fire loss, is a homeowner and community choice and responsibility." (Pg. 11)* **FS Response:** This tries to describe and define what the Wildland Urban Interface is and discusses how the corresponding responsibility for WUI home fire loss potential resides with homeowners and communities rather than federal, state and local land management agencies. The opposing views associated to Dr. Cohen are of the same nature and scope as the previous opposing views found above. Please see the responses to all the opposing views above.
Cohen, Jack D.; Butler, Bret W. 1998. Modeling potential ignitions from flame radiation exposure with implications for wildland/urban interface fire management. In: Proceedings of the 13th conference on fire and forest meteorology, vol. 1. 1996 October 27-31; Lorne, Victoria, Australia. Fairfield, WA: International Association of Wildland Fire; 81-86.	Opposing View #29: *"Model results indicate that ignitions from flame radiation are unlikely to occur from burning vegetation beyond 40 meters of a structure. Thinning vegetation within 40 meters has a significant ignition mitigation effect." (Pg. 81)* Opposing View #30: *"Vegetation management to prevent ignitions from radiation does not require extensive vegetation removal hundreds of meters from a structure. Our analysis indicated that 40 meters was sufficient for a 20 meter flame height." (Pg. 86 – Conclusions)* **FS Response:** The opposing views associated to Cohen and Butler is of the same nature and scope as the previous opposing views found above. Please see the responses to all the opposing views above.
Cohen, J.D. 2000. Preventing Disaster Home Ignitability in the Wildland-Urban Interface. Journal of Forestry. 98(3): pages 15-21.	Opposing View #31: *"Miracles aside, the characteristics of the surviving home and its immediate surroundings greatly influenced its survival." (Pg. 15)* Opposing View #32: *"Based on severe-case assumptions of flame radiation and exposure time, SIAM calculations indicate that wild-land flame fronts comparable to crowning and torching trees (flames 20 meters high and 50 meters wide) will not ignite wood surfaces at distances greater than 40 meters (Cohen and Butler, in press). Figure 2 shows the radiant heat a wall would receive from flames depending on its distance from the fire. The incident radiant heat flux, defined as the rate of radiant energy per unit area received at an exposed surface, decreases as the distance increases." (Pg. 17)*

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	Opposing View #33*: "Analyses of both fires indicate that home ignitions depend on the characteristics of a structure and its immediate surroundings. Howard et al. (1973) observed 86 percent survival for homes with nonflammable roofs and a clearance of 10 meters or more." (Pg. 19)* Opposing View #34: *"Using the model results as guidance with the concurrence of experiments and case studies, we can conclude that home ignitions are not likely unless flames and firebrand ignitions occur within 40 meters of the structure. This finding indicates that the spatial scale determining home ignitions corresponds more to specific home and community sites than to the landscape scales of wildland fire management. Thus, the W-UI fire loss problem primarily depends on the home and its immediate site." (Pg.20)* Opposing View #35: *"Thus, the W-UI fire loss problem can be defined as a home ignitability issue largely independent of wildland fuel management issues. This conclusion has significant implications for the actions and responsibilities of homeowners and fire agencies, such as defining and locating potential W-UI fire problems (for example, hazard assessment and mapping), identifying appropriate mitigating actions, and determining who must take responsibility for home ignitability." (Pg.20)* Opposing View #36: *"The W-UI fire case studies indicated approximately 90 percent survival with a vegetation clearance on the order of 10 to 20 meters for homes with nonflammable roofs. Thus, the case studies support the general flame-to-structure distance range of 10 to 40 meters as found through modeling and experiments." (Pg.20)* Opposing View #37: *"A change needs to take place in the relationship between homeowners and the fire services. Instead of home-related pre-suppression and fire protection responsibilities residing solely with fire agencies, homeowners must take the principal responsibility for ensuring adequately low home ignitability." (Pg.21)* **FS Response:** The Structure Ignition Assessment Model (SIAM) calculation of wildland flame front is based upon flame radiation and exposure time. It is not basing its statistical analysis upon convection and transport of firebrands. The importance of treating fuels is evident when analyzing the SIAM model developed by Cohen (Cohen 1995) and results from the International Crown Fire Modeling Experiment, which showed that lofted firebrands can land on highly ignitable homes and ignite during a wildland fire without a fire spreading near the structure. This occurs when firebrands are lofted downwind from fires. The firebrands subsequently collect on and ignite flammable home materials (such as roofs) and adjacent flammables (such as woodpiles, decking, and landscaped vegetation). Firebrands that result in ignitions can originate from wildland fires that are a distance of 1 kilometer (0.6 mile) or more (Cohen 2000). Thus, reducing the severity of

Author/Date/Title	Response to literature cited in opposing views
	wildland fire well away from structures can reduce the risk of structure loss by reducing the incidence of firebrand lofting. Also, these opposing views associated to Dr. Cohen are of the same nature and scope as the previous opposing views found above. Please see the responses to all the opposing views above.
Reinhardt, Elizabeth; Keane, Robert; Calkin, David; Cohen, Jack. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States Published in Forest Ecology and Management 256, 2008, 10 pp.	Opposing View #38: *"Many scientists and natural resource agencies suggest extensive fuel treatments to reduce the possibility of severe and intense wildfires that could damage ecosystems, destroy property, and take human life (USDA Forest Service, 2000; GAO, 2003a,b). However, there are a number of misconceptions and misunderstandings about fuel treatments and their use as a panacea for fire hazard reduction across the United States (Finney and Cohen, 2003; Franklin and Agee, 2003)." (Pg.1998)* Opposing View #39: *"Given the right conditions, wildlands will inevitably burn. It is a misconception to think that treating fuels can ''fire-proof'' important areas. It would be virtually impossible to exclude fire from most temperate terrestrial ecosystems because ignition sources are prevalent and fuels cannot be eliminated. Ignition is rarely affected by fuel treatment." (Pg.1998)* Opposing View #40: *"Treating fuels to facilitate suppression is an example in circular logic. If fuel treatment makes suppression more successful in general, then less area will be burned in the short run and more acreage will tend to burn under extreme conditions, when suppression is ineffective. The inevitable result is that more area is burned in fewer, more unmanageable events with greater consequences. In addition, fire suppression leads to continued fuel accumulation and, in turn, more difficult conditions for suppression. This phenomenon has been described as ''the wildland fire paradox'' (Brown and Arno, 1991). Rather than creating conditions where fire is easier to suppress, fuel treatments should strive to create conditions where fire can occur without the need for suppression." (Pg.1998)* Opposing View #41*: "Bessie and Johnson (1995) show weather (fuel moisture and wind) is far more important than fuels in determining fire behavior; reducing fuels may have a limited impact on fire occurrence." (Pg.1999)* Opposing View #42: *"Treating fuels to reduce fire occurrence, fire size, or amount of burned area is ultimately both futile and counter-productive." (Pg.1999)* Opposing View #43: *"Since the home ignition zone largely occurs on private lands, most land management agencies do not have the authority to mitigate the WUI ignition potential directly (Cohen, 2000b). However, the opportunity exists to explicitly define responsibilities for the WUI fire potential (i.e. the home ignition zone) consistent with areas of jurisdiction and separately from ecological wildfire issues." (Pg.1999)* Opposing View #44: *"It may not be necessary or effective to treat fuels in adjacent areas in order to suppress fires before they reach*

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	homes; rather, it is the treatment of the fuels immediately proximate to the residences, and the degree to which the residential structures themselves can ignite that determine if the residences are vulnerable." (Pg.1999) Opposing View #45: *"WUI fuel treatments can be designed such that an extreme wildfire can occur in the WUI without having a residential fire disaster. Although general wildfire control efforts may not benefit from fuel treatments during extreme fire behavior, fuel modifications can significantly change outcome of a wildfire within a treatment area. Research has shown that a home's characteristics and its immediate surroundings principally determine the WUI ignition potential during extreme wildfire behavior (Cohen, 2000a,c, 2003, 2004). The area that primarily determines WUI ignition potential is called the home ignition zone (Cohen, 2001). WUI fuel treatments can address the home ignition zone by removing flammable materials immediately adjacent to residences.")Pg. 1999)* Opposing View #46: *"Treating fuels may not reduce suppression expenditures. It is a natural mistake to assume that a successful fuel treatment program will result in reduced suppression expenditures. Suppression expenditures rarely depend directly on fuel conditions, but rather on fire location and on what resources are allocated to suppression. The only certain way to reduce suppression expenditures is to make a decision to spend less money suppressing fires." (Pg. 2000)* Opposing View #47: *"Thinning to reduce crown fire potential requires careful evaluation of the tradeoffs in treatment effects on potential surface fire behavior and crown fire behavior (Scott and Reinhardt, 2001). Thinning will often result in increased potential surface fire behavior, for several reasons. First, thinning reduces the moderating effects of the canopy on windspeed, so surface windspeed will increase (Graham et al., 2004). It also results in increased solar radiation on the forest floor, causing drier surface fuels. It may also cause an increase in flammable grassy and shrub fuels over time, due to the reduced tree competition." (Pg.2000)* Opposing View #48: *"Some viable fuel treatments may actually result in an increased rate of spread under many conditions (Lertzman et al., 1998; Agee et al., 2000). For example, thinning to reduce crown fire potential can result in surface litter becoming drier and more exposed to wind. It can also result in increased growth of grasses and understory shrubs which can foster a rapidly moving surface fire." (Pg.2000)* Opposing View #49: *"Treating fuels may not improve ecosystem health. Ecosystem restoration treatment and fuel treatment are not synonymous. Some ecosystem restoration treatments reduce fuel hazard, but not all fuel treatments restore ecosystems. Ecosystem restoration treatments are often designed to recreate presettlement fire regimes, stand structures and species compositions while fuel treatment objectives are primarily to reduce fuels to lessen fire behavior or severity—this is known as ''hazard Reduction.'' Achieving fuel hazard reduction goals in the absence of ecosystem*

Author/Date/Title	Response to literature cited in opposing views
	restoration is insufficient (Dombeck et al., 2004; Kauffman, 2004)." (Pg.2000) Opposing View #50: "*Conversely, some fuel treatments can reduce fuels but create stands that are quite dissimilar from their historical analogs. Examples include mastication treatments that break, chip, or grind canopy and surface woody material into a compressed fuelbed and thinning treatments that remove the fire adapted species and leave shade-tolerant, late successional species." (Pg.2000)* **FS Response:** The Forest Service agrees with the findings of this paper. The opposing views #38 to #50 are partial renderings that are often presented, as above, out of context. This particular paper needs to be considered in its entirety for a complete understanding of the authors' intentions. The Reinhardt et.al paper concludes with: *"Fuel treatment is an important management tool for reducing fire hazard. However, confusion exists as to the purpose and potential effectiveness of fuel treatment activities. We feel that fuel treatments should be used to reduce fire severity and intensity instead of fire occurrence. We also believe that fuel treatments should attempt to increase ecosystem resilience, especially in wildland settings. The range and variation of historical stand and landscape composition and structures should be used as guides but not targets…Exotics, climate change, and other human-induced factors will influence fuel treatment effects in the future and these factors should be addressed in all fire management plans. However, the influence of these factors will not diminish the need to treat fuels and restore fire-prone ecosystems. In fact, these factors increase the need to create landscapes that are as resilient as possible."* Ecosystem resilience is enhanced in the Telegraph Vegetation project area by the mechanical and broadcast burn treatments described in the selected alternative. These treatments will change the vegetation/fuel structure and composition to be more in line with the historical patterns found prior to human influence. Additionally, the treatments will reduce wildland fire severity and intensity to allow firefighters an enhanced ability to suppress these fires before they reach values to be protected or be able to survive a wildfire event with no suppression action taken. The Forest Service has taken the site-specific approach recommended in this paper (page 2001) to design a project that meets not only the fuels reduction purpose and need but the other resource objectives described in the Decision Notice.

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Letter 9: Donald Bacon	
The Telegraph Vegetation Project started in 2008 in response to the MPB epidemic. The constant change in personnel involved in the management of the Helena National Forest has created a duplication of efforts and a prolonged delay in the project goals. Why has it taken seven years to complete an impact statement? Is there any marketable or salvage value for all the dead and dying trees at this time? (9-1) The USFS has also way underestimated the cost of building temporary roads and their subsequent obliteration. (9-2) Any roads that are built should be left open for retrieval of wild game during hunting season and for future fire-fighting efforts. (9-3) Bonding requirements should allow for smaller local loggers and contractors to be able to participate in the bidding process for this project. (9-4) In my opinion, many of your employees remain out of touch with Montana culture, its history and fail to understand the vast lands they are trying to manage. In Closing, I find Alternative II to be least objectionable.	(9-1) It is anticipated that wood products would be available to some degree from the dead and dying trees removed as a result of these action alternatives. Recent logging activity on private land has resulted in wood products being sold as firewood, lumber, posts and poles, and pulp. (9-2) Costs associated with road construction and obliteration were derived from the Engineering Cost Estimate Guide (02/2014). Costs were validated and updated as needed for the Economic Analysis. Economic Resource Report. (9-3) All roads built and used during the span of implementation may be used for administrative and emergency access. This could also include non-motorized game retrieval. This project has been designed to enhance long-term fire suppression objectives and incorporates treatments along ridges, valley bottoms, and natural openings. Once fuel conditions are modified, long-term fire suppression actions may not need these short sections of temporary road. (9-4) Performance bonds and bid guarantees are set by regional standards based on timber value, erosion control work and other purchaser requirements.
Letter 10: Doug and Doris Crachy	
We are providing our comments on the Draft Environmental Impact Statement for the Telegraph Vegetation Project. We are in favor of Alternative No. 2 for the following reasons: 1. Due to the lack of any forest fuels management in the Telegraph drainages during the last few decades, it is, in our opinion, necessary to adopt Alternative No. 2 to effectively make the project area healthy again. With the significant impact of diseased timber in the project area, reducing the fuels in a controlled manner will better serve all wildlife and private land owners. (10-1) The environmental impact of a forest fire in the project area would be far more detrimental than Alternative No. 2 - Telegraph Vegetation Project. 2. Elk security will be adequate with the Jerico Mountain IRA and Electric Peak IRA being adjacent to the project area and the Spotted Dog WMA, which is also a roadless area, not far to the west. Alternative No. 2 will create more forage for deer and elk within the project area as well as improve the health of aspen groves in the project area. Our concerns are as follows: 1. The DEIS states the drainages are impaired as identified on the State of Montana Clean Water Act section 303(d). Has the recent work done by the DEQ and EPA on the mine dumps been considered, or was this identification done before their cleanup work? (10-2)	(10-1) Thank you for your comment. All proposed treatments would be analyzed and environmental effects displayed for fuels, soils and wildlife Please refer to the Fire/Fuels report, Forested Vegetation Report and Wildlife report for detailed information. (10-2) The information in the Draft EIS regarding Clean Water Act Section 303(d) water quality impairments was based on 2012 reports from the Montana DEQ. The FEIS has been updated to reflect a newly released 2014 addendum on metals impairments. See the Hydrology specialist report for details on impaired stream segments in the project-area watersheds. (10-3) Please refer to the Hydrology specialist report in the FEIS for a detailed explanation of data sources and methodologies used to assess existing conditions in project-area watersheds. Stream impairment and sources for this impairment are determined by the Montana Department of Environmental Quality using state water quality data. For more information, please refer to the Little Blackfoot TMDL reports referenced in the

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2. What is used for the base line on the water quality studies? (10-3) In your Draft EIS you state that "Stream impairments in the project area are primarily a result of past mining activity, forest roads and livestock activities." To make that determination a base line of water quality would need to be established to truly identify the source of stream impairment. To our knowledge, we are not aware of any livestock grazing permits in this project area other than on private land. 3. Consideration should be given to allow small contractors to bid on the proposed project to better serve the local economy. (10-4) Sincerely, Doug and Doris Crachy PO Box 34 Elliston, MT 59728 406-492-8484	Hydrology specialist report and contained in the project record. (10-4) All qualified contractors and timber purchasers would be given the opportunity to bid on all aspects of the implementation of this project.

Letter 11: Michael Garrity, AWR Comments	Response to Comments
Thank you for the opportunity to comment. Please accept these comments on the Telegraph Vegetation Project Draft Environmental Impact Statement on behalf of the Alliance for the Wild Rockies Montana Ecosystem Defense Council and Native Ecosystems Council. We asked you in our scoping comments to "Please Analyze a no logging alternative. " **(11-1)** The response in the DEIS, page xv says: "No Logging It was suggested by one commenter that we should analyze a "no logging alternative." For the EIS we will be analyzing a no action alternative that will display the effects of no treatment within the project area. The possibility of a prescribed burn only alternative was discussed within the IDT but was decided to be largely unfeasible and not likely to meet the project objectives stated in the project purpose and need." This project is in violation of NEPA, NFMA, and the APA because you did not consider this as an alternative. It only doesn't meet the purpose and Need because you defined the purpose and need so narrowly. The EIS should consider a no logging alternative especially considering one of the purpose and needs to protect the watershed. The DEIS says on page xviii: "Alternative 2 is designed to be responsive to the Mountain Pine Beetle (MPB) outbreak in the area. The project area has experienced wide-scale tree mortality in the past few years. Treatments are needed to meet forest plan goals and direction, ensure diverse and sustainable forest stands and wildlife habitat in the future, improve conditions for fire suppression, recover economic value of dead and dying trees and to maintain and improve watershed conditions. Establishing a greater diversity in species, age, size class and density can help the landscape to be more resilient. This project will also encourage aspen stand health and size and promote the reproduction of whitebark pine…" Alternative 3 has slightly smaller amounts of logging. We believe your assumptions are incorrect and therefore in violation of NEPA, NFMA, the APA, the Cleanwater Act and the ESA. For example the MPB outbreak has already ensured diverse and sustainable forest stands and wildlife habitat by naturally thinning the forest. Please see the attached article titled: "Bark beetles are killing forests — but they might be saving them, too" By Maddie Oatman on 20 Mar 2015 (Lit review) http://grist.org/science/bark-beetles-are-killing-forestsbut-they-might-be-saving-them-	**(11-1)** Please take the time to review the DEIS on page 48. This alternative was given consideration. Literature Review This article refers to the thinning of healthy lodgepole pine stands to prevent mountain pine beetle mortality. The Telegraph Vegetation Project proposes to regenerate stands where the vast majority of trees have already been killed, so is not applicable to this project.

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too/?utm_campaign=daily_feed&utm_medium=email&utm_source=newsletter Despite the use of pejorative words like forests are "ransacked by bugs" and so forth, the article does make a point that within any tree species there are different genetic makes ups that give some trees the ability to survive beetles better than other trees. However, when foresters log the forest (totally ignorant of the genetic makeup of the trees) they are often removing the very trees that are best adapted to the new environmental context. It is a good example of the lack of humidity that "managers" intent on "fixing" the forest display. They are degrading and impoverishing our forests, not helping it. The beetles naturally "thin" forests removing the least adaptive trees to 'current" conditions. They do this for free. And politicians, timber company representatives and the Forest Service are playing upon people's ignorance trying to suggest that logging can cure this "problem" which actually isn't a problem at all. Bark beetles are killing forests — but they might be saving them, too By Maddie Oatman on 20 Mar 2015 Grist “This story was originally published by Mother Jones There is an eerie feel to this grove of lodgepole pines that I can’t quite put my finger on as entomologist Diana Six tromps ahead of me, hatchet in hand, scanning the southwestern Montana woods for her target. But as she digs the blade into a towering trunk, it finally hits me: the smell. There’s no scent of pine needles, no sharp, minty note wafting through the brisk fall air. Six hacks away hunks of bark until she reveals an inner layer riddled with wormy passageways. “Hey, looky!” she exclaims, poking at a small black form. “Are you dead? Yeah, you’re dead.” She extends her hand, holding a tiny oval, maybe a quarter of an inch long. Scientists often compare this insect to a grain of rice, but Six prefers mouse dropping: “Beetle in one hand, mouse turd in another. You can’t tell them apart.” She turns to the next few trees in search of more traces. Pill-size holes pock their ashen trunks — a sign, along with the missing pine scent, of a forest reeling from an invasion. These tiny winged beetles have long been culling sickly trees in North American forests. But in recent years, they’ve been working overtime. Prolonged droughts and shorter winters have spurred bark beetles to kill billions of trees in what’s likely the largest forest insect outbreak ever recorded, about 10 times the size of past eruptions. “A doubling would have been remarkable,” Six says. “Ten times screams that something is really going wrong.” Mountain pine, spruce, piñon ips, and other kinds of bark beetles have chomped 46 million of the country’s 850 million acres of forested land, from the Yukon down the spine of the Rocky Mountains all the way to Mexico.	

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Yellowstone's grizzly bears have run out of pinecones to eat because of the beetles. Skiers and backpackers have watched their brushy green playgrounds fade as trees fall down, sometimes at a rate of 100,000 trunks a day. Real estate agents have seen home prices plummet from "viewshed contamination" in areas ransacked by the bugs, And the devastation isn't likely to let up anytime soon. As climate change warms the North American woods, we can expect these bugs to continue to proliferate and thrive in higher elevations — meaning more beetles in the coming century, preying on bigger chunks of the country. From 2000 to 2014, bark beetles destroyed large swaths of forests in the American West — and they're not done yet. From 2000 to 2014, bark beetles destroyed large swaths of forests in the American West — and they're not done yet. In hopes of staving off complete catastrophe, the United States Forest Service, which oversees 80 percent of the country's woodlands, has launched a beetle offensive, chopping down trees to prevent future infestations. The USFS believes this strategy reduces trees' competition for resources, allowing the few that remain to better resist invading bugs. This theory just so happens to also benefit loggers, who are more than willing to help thin the forests. Politicians, too, have jumped on board, often on behalf of the timber industry: More than 50 bills introduced since 2001 in Congress proposed increasing timber harvests in part to help deal with beetle outbreaks. But Six believes that the blitz on the bugs could backfire in a big way. For starters, she says, cutting trees "quite often removes more trees than the beetles would" — effectively out-beetling the beetles. But more importantly, intriguing evidence suggests that the bugs might be on the forest's side. Six and other scientists are beginning to wonder: What if the insects that have wrought this devastation actually know more than we do about adapting to a changing climate? An adult mountain pine beetle lays her eggs under the bark. On her way, she disperses fungi that turn the trees' tissue into food for her babies, eventually killing the tree. An adult mountain pine beetle lays her eggs under the bark. On her way, she disperses fungi that turn the trees' tissue into food for her babies, eventually killing the tree. Though they're often described as pesky invaders, bark beetles have been a key part of conifer ecosystems for ages, ensuring that groves don't get overcrowded. When a female mountain pine beetle locates a frail tree, she emits a chemical signal to her friends, who swarm to her by the hundreds. Together, they chew through the bark until they reach the phloem, a cushy resinous layer between the outer bark and the sapwood that carries sugars through the tree. There, they lay their eggs in tunnels and eventually a new generation of beetles hatches, grows up, and flies away. But before they do, the mature beetles also spread a special fungus in the center of the trunk. And that's where things get really interesting. Six focuses on the "evolutionary marriage" of beetle and fungi at her four-person lab at the University of Montana,	

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where she is the chair of the Department of Ecosystems and Conservation Sciences. Structures in bark beetles' mouths have evolved to carry certain types of fungi that convert the tree's tissue into nutrients for the bug. The fungi have "figured out how to hail the beetle that will get them to the center of the tree," Six says. "It's like getting a taxi." The fungi leave blue-gray streaks in the trees they kill; "blue-stain pine" has become a specialty product, used to make everything from cabins to coffins to iPod cases. A healthy tree can usually beat back invading beetles by deploying chemical defenses and flooding them out with sticky resin. But just as dehydration makes humans weaker, heat and drought impede a tree's ability to fight back — less water means less resin. In some areas of the Rocky Mountain West, the mid-2000s was the driest, hottest stretch in 800 years. From 2000 to 2012, bark beetles killed enough trees to cover the entire state of Colorado. "Insects reflect their environment," explains renowned entomologist Ken Raffa — they serve as a barometer of vast changes taking place in an ecosystem. Under the microscope, Diana Six picks up a dead mountain pine beetle in her Missoula lab. Shawn Gust Typically, beetle swells subside when they either run out of trees or when long, cold winters freeze them off (though some larvae typically survive, since they produce antifreeze that can keep them safe down to 30 below). But Zin warm weather, the bugs thrive. In 2008, a team of biologists at the University of Colorado observed pine beetles flying and attacking trees in June, a month earlier than previously recorded. With warmer springs, the beetle flight season had doubled, meaning they could mature and lay eggs — and then their babies could mature and lay eggs — all within one summer. That's not the only big change. Even as the mountain pine beetles run out of lodgepole pines to devour in the United States, in 2011 the insects made their first jump into a new species of tree, the jack pine, in Alberta. "Those trees don't have evolved defenses," Six says, "and they're not fighting back." The ability to invade a new species means the insects could begin a trek east across Canada's boreal forest, then head south into the jack, red, and white pines of Minnesota and the Great Lakes region, and on to the woods of the East Coast. Similarly, last year, the reddish black spruce beetle infested five times as many acres in Colorado as it did in 2009. And in the last decade, scientists spotted the southern pine beetle north of the Mason-Dixon Line for the first time on record: in New Jersey, and later on, Long Island. As investigative journalist Andrew Nikiforuk put it in his 2011 book on theoutbreaks, we now belong to the "empire of the beetle." In a weird way, all of this is exciting news for Six: She is not only one of the world's foremost experts in beetle fungi symbiosis, but proud to be "one of the few people in Montana who thinks bark beetles are cute." (She's even brewed her own beer from beetle fungi.) As a child, she filled her bedroom in Upland, Calif., with jars of insects and her fungus collection. But as a teenager, she got into	

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drugs, quit high school, and started living on the streets. Nine years later, she attended night school, where teachers urged her to become the first in her family to go to college. And when she finally did, she couldn't get enough: classes in microbiology and integrated pest management led to a master's degree in veterinary entomology, then a PhD in entomology and mycology and a postdoc in chemical ecology, focused on insect pheromones. Entomologist Diana Six, who has devoted her career to bark beetles, believes that the bugs might hold clues to saving our forests in the face of climate change. Shawn Gust Six, 58, has light-green eyes ringed with saffron, and long silvery-blond hair streaming down shoulders, and she's toned from fly-fishing and bodybuilding. As several fellow researchers stressed to me, she is a rare scientist who's also a powerful communicator. "I think about what it means to be a tree," she told a rapt audience at a TEDx talk about global forest die-offs. "Trees can't walk. Trees can't run. Trees can't hide," she continued, her sonorous voice pausing carefully for emphasis. "And that means that when an enemy like the mountain pine beetle shows up, they have no choice but to stand their ground." To a tree hugger, that might seem a grim prognosis: Since trees can't escape, they'll all eventually be devoured by insects, until we have no forests left. Especially since, with our current climate projections, we might be headed toward a world in which beetle blooms do not subside easily, but instead continue to spread through new terrain. But Six has a different way of looking at the trees' plight: as a battle for survival, with the army of beetles as a helper. She found compelling evidence of this after stumbling across the work of Forest Service researcher Constance Millar, with whom she had crossed paths at beetle conferences. Millar was comparing tree-core measurements of limber pines, a slight species found in the eastern Sierras of California that can live to be 1,000 years old. After mountain pine beetles ravaged one of her study sites in the late 1980s, certain trees survived. They were all around the same size and age as the surrounding trees that the beetles tore through, so Millar looked closer at tree ring records and began to suspect that, though they looked identical on the outside, the stand in fact had contained two genetically distinct groups of trees. One group had fared well during the 1800s, when the globe was still in the Little Ice Age and average temperatures were cooler. But this group weakened during the warmer 1900s, and grew more slowly as a result. Meanwhile, the second group seemed better suited for the warmer climate, and started to grow faster. Pine beetles have increasingly attacked fragile whitebark pine trees, whose cones are an important food source for grizzly bears, Clark's nutcrackers, red squirrels, and other animals in the Yellowstone area. Pine beetles have increasingly attacked fragile whitebark pine trees, whose cones are an important food source for grizzly bears, Clark's nutcrackers, red squirrels, and other animals in the Yellowstone area. Maddie Oatman When beetle populations exploded in the 1980s, this second group mounted a much more successful battle against the bugs.	

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After surviving the epidemic, this group of trees "ratcheted forward rapidly," Millar explains. When an outbreak flared up in the mid-2000s, the bugs failed to infiltrate any of the survivor trees in the stand. The beetles had helped pare down the trees that had adapted to the Little Ice Age, leaving behind the ones better suited to hotter weather. Millar found similar patterns in whitebark pines and thinks it's possible that this type of beetle-assisted natural selection is going on in different types of trees all over the country. When Six read Millar's studies, she was floored. Was it possible, she wondered, that we've been going about beetle management all wrong? "It just hit me," she says. "There is something amazing happening here." Last year, Six and Eric Biber, a University of California-Berkeley law professor, published a provocative review paper in the journal Forests that challenged the Forest Service's beetle-busting strategies. After scrutinizing every study about beetle control that they could get their hands on, they concluded that "Even after millions of dollars and massive efforts, suppression … has never effectively been achieved, and, at best, the rate of mortality of trees was reduced only marginally." Six points to a stand of lodgepoles in the University of Montana's Lubrecht Experimental Forest. In the early 2000s, school foresters preened the trees, spacing them out at even distances, and hung signs to note how this would prevent beetle outbreaks. This "prethinned" block was "the pride and joy of the experimental forest," Six remembers. But that stand was the first to get hit by encroaching pine beetles, which took out every last tree. She approached the university forest managers. "I said, 'Boy, you need to document that,'" Six says. "They didn't. They just cut it down. Now, there's just a field of stumps." Six and Biber's paper came as a direct affront to some Forest Service researchers, one of whom told me that he believes changing forest structure through thinning is the only long-term solution to the beetle problem. Politicians tend to agree — and beetle suppression sometimes serves as a convenient excuse: "It is perhaps no accident that the beetle treatments most aggressively pushed for in the political landscape allow for logging activities that provide revenue and jobs for the commercial timber industry," Six and Biber wrote in the Forests review.	
Take the Restoring Healthy Forests for Healthy Communities Act, proposed in 2013 by then-Rep. Doc Hastings (R-Wash.) and championed by then-Rep. Steve Daines (R-Mont.). The bill sought to designate "Revenue Areas" in every national forest where, to help address insect infestations, loggers would be required to clear a certain number of trees every year. Loggers could gain access to roadless areas, wilderness study areas, and other conservation sites. Once designated, their acreage could never be reduced. The zones would also be excluded from the standard environmental-review process.	Lit Review - Several recent articles regarding MPB mortality and fire effects were reviewed and incorporated into the design and analysis for this project. The purpose of treatments in all action alternatives are designed to modify fire behavior that would complement and assist our pre-determined wildfire response and suppression tactics and strategizes.

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Six and other scientists vehemently opposed these massive timber harvests — as did environmental advocates like the Sierra Club and Defenders of Wildlife, the latter warning that the harvests would take logging to "unprecedented and unsustainable levels." The bill passed the House died in the Senate last year. But Daines, now a senator and one of 2014's top 10 recipients of timber money, vows to renew the effort so as to "revitalize Montana's timber industry" and "protect the environment for future generations."	
This summer, Six plans to start examining the genes of "supertrees" — those that survive beetle onslaughts — in stands of whitebarks in Montana's Big Hole Valley. Her findings could help inform a new kind of forest management guided by a deeper understanding of tree genes — one that beetles have had for millennia. If we pay close enough attention, someday we may be able to learn to think like they do. University of California-Davis plant sciences professor David Neale champions a new discipline called "landscape genomics." At his lab in Davis, Neale operates a machine that grinds up a tree's needles and spits out its DNA code. This technology is already being used for fruit tree breeding and planting, but Neale says it could one day be used in wild forests. "As a person, you can take your DNA and have it analyzed, and they can tell you your relative risk to some disease," Neale says. "I'm proposing to do the same thing with a tree: I can estimate the relative risk to a change in temperature, change in moisture, introduction to a pathogen." Signs of beetle invasion on a whitebark pine tree in Montana's Big Hole Valley. Signs of beetle invasion on a whiteBark pine tree in Montana's Big Hole Valley. Maddie Oatman Right now, foresters prune woodlands based on the size of tree trunks and density of stands. If we knew more about trees' genetic differences, Neale says, "Maybe we would thin the ones that have the highest relative risks." This application is still years off, but Neale has already assembled a group of Forest Service officials who want to learn more about landscape genomics.	Lit Review - Several recent articles regarding MPB mortality and fire effects were reviewed and incorporated into the design and analysis for this project. The purpose of treatments in all action alternatives are designed to modify fire behavior that would complement and assist our pre-determined wildfire response and suppression tactics and strategizes. Specifically in the Fire and Fuels report, it states, fire behavior is driven by the combination of fuels, topography, and weather across the landscape.
Meanwhile, Six places her faith in the beetles. Whereas traditional foresters worry that failing to step in now could destroy America's forests, Six points to nature's resilience. Asked at TEDx how she wants to change the world, she responded, "I don't want to change the world. We have changed the world to a point that it is barely recognizable. I think it's time to stop thinking change and try to hold on to what beauty and function remains."	
Diana Six in her lab at the University of Montana. Shawn Gust" Wildlife habitat has improved for a number of species by providing more hiding cover and horizontal cover. Pine martin need jack straw trees to get around in the winter. The MPB also reduced the threat of wildfires in the project area. Clearcutting the MPB stands will also kill whitebark pine trees. The best way to promote whitebark pine is to plant them not clearcut them.	

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Attached is a paper titled: "Area burned in the western United States is unaffected by recent mountain pine beetle outbreaks" (Lit Review) SNP: Here, we show that the observed effect of MPB infestation on the area burned in years of extreme fire appears negligible at broad spatial extents. Contrary to the expectation of increased wildfire activity in recently infested red-stage stands, we found no difference between observed area and expected area burned in redstage or subsequent gray-stage stands during three peak years of wildfire activity, which account for 46% of area burned during the 2002–2013 period. Although MPB infestation and fire activity both independently increased in conjunction with recent warming, our results demonstrate that the annual area burned in the western United States has not increased in direct response to bark beetle activity." Attached is yet another paper titled: "Does wildfire likelihood increase following insect outbreaks in conifer forests?" (Lit Review) It calls into question the idea that dead trees will increase fire likelihood. The authors conclude there is no greater chance of fire in beetle killed forests than in other green forests. In fact in some cases it lowers fire likelihood. In fact they conclude that beetles and other insects may be doing fuel reductions. The paper also finds that climate drives large fires, not fuels.	
Yet the purpose and need in the DEIS and on-going timber sales by the Forest Service around the West regularly ignores these findings, using the excuse that beetle kill trees are a fire hazard and that we must log dead trees and/or thin forests to keep them from being killed by insects in violation of NEPA, NFMA, the APA, the Clean water Act and the ESA. **(11-2)** http://www.esajournals.org/doi/10.1890/ES15-00037.1 (Lit review) It's important for the EIS to recognize four important factors related to wildfire that we hope you can incorporate the FEIS. 1. Under severe fire weather/climate conditions you cannot stop wildfires. **(11-3)** These conditions include drought, high temps, low humidity and most importantly high winds. Under such conditions, fuel reductions, air tankers, logging/clearcuts, highways, rivers, and Walmart parking lots will not stop fires. 2. The majority of all acreage burned in any season are the result of a few large blazes**. (11-4)** These are the fires that everyone wants to stop, but cannot control. And despite all the rhetoric about low intensity/frequent fires being "normal", and large severe fires sometimes pejoratively termed "catastrophic" do the bulk of all ecological work in our ecosystems. 3. Large wildfires are critical for many species. **(11-5)** A healthy forest ecosystem is characterized by periodic events like wildfire. Large fires are among the major sources of snags and down wood that many plants and	**(11-2)** This project is not about addressing beetle kill trees because they are a fire hazard. Treatment in MPB effected stands are proposed to address safety hazards to firefighters. Also, this project does not propose thinning in lodgepole stands. Lit Review – See LR-4 **(11-3)** The purpose of treatments in all action alternatives are designed to modify fire behavior that would complement and assist our pre-determined wildfire response and suppression tactics and strategies. Specifically in the fuels it states, fire behavior is driven by the combination of fuels, topography, and weather across the landscape. Treatments are effective in all but the most severe conditions. **(11-4)** A/I-Fuels- True. Thank you for your comment. **(11-5)** The wildlife analysis in the FEIS recognizes the role of fire as a determinant of wildlife habitat – "[w]ildfires are inevitable… They are essential for many wildlife species, beneficial to some, and detrimental to others, depending upon the magnitude and severity of the fires" See the Probability of Severe Wildfires following MPB Mortality section). The

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animals rely upon for habitat. These episodic inputs of dead trees from fires and other agents like beetles are "keystone" events that provide the bulk of this wood so important to ecosystem health. In other words, even if it were possible to stop these large blazes we would not want to do this for ecological reasons. 4. Most national forest policies including fuel reductions are aimed at stopping such fires, and they are the very fires we cannot prevent or control. **(11-6)** They give the delusion that we can influence these fires. But as we saw in Yellowstone in 1988 when snow fell, it is only changing weather conditions that extinguishes such large blazes. The Forest Service's current policies of trying to control fires through fuel reductions across the landscape is like building levees that will withstand a minor hurricane, but fail completely when there is a direct hit of a Category Five hurricane like Katrina. Billions are being wasted on trying to control or halt fires that pose no threat to human homes, and should be left to rejuvenate the forest. And fire fighter lives are jeopardized for no reason. 5. The majority of firefighting effort and funds are used to protect structures. **(11-7)** Just as building homes in the flood plain of a river, sooner or later means that home will be threatened by raising waters, building in the "fire plain" has the same consequences. Rural communities and counties need to zone homes out of the "fire plain" and keep homes from being built in these areas. 6. While the efficacy of fuel reductions is questionable, especially when they are done miles from communities, what we do know is that the ONLY way to protect homes and communities is to reduce the flammability in the "home ignition zone**".(11-8)** Research suggests this requires no more than 200 feet from a home site. Thank you for writing an EIS. We asked that you answer the following: A. Disclose all Helena National Forest Plan requirements for logging/burning projects and explain how the Project complies with them**;(11-9)** B. Will this project comply with forest plan big game hiding cover standards**?(11-10)** C. Disclose the acreages of past, current, and reasonably foreseeable logging, grazing, and road-building activities within the Project area**;(11-11)** D. Solicit and disclose comments from the Montana Department of Fish, Wildlife, and Parks regarding the impact of the Project on wildlife habitat;**(11-12**) E. Solicit and disclose comments from the Montana Department of Environmental Quality regarding the impact of the Project on water quality;**(11-13)**	Canada Lynx section speaks to the role of fire in creating snowshoe hare habitat (See Affected Environment, Delineating Lynx Habitat section). The Snags and Woody Debris section includes the recognition that fire is a primary causal factor in snag creation (See Affected Environment, The Nature of the Resource and Wildlife Habitat Opportunities sections). See also the Hairy Woodpecker, Migratory Landbirds and Shorebirds, Aspen, Whitebark Pine sections, and so forth, in the FEIS. **(11-6)** The purpose of treatments in all action alternatives are designed to modify fire behavior that would complement and assist our pre-determined wildfire response and suppression tactics and strategizes. Specifically in the fuels it states, fire behavior is driven by the combination of fuels, topography, and weather across the landscape. **(11-7)** Thank you for your comment. **(11-8)** Thank you for your comment. **(11-9)** All Forest Plan standard for implementation were described in the Forest Plan consistency table – Appendix B in the DEIS. This table will be updated for the FEIS and included as an appendix. **(11-10)** The project is consistent with Forest Plan standard 3 with respect to hiding cover. Forest plan standard 4a, originally a hiding cover/open road density index, has been amended through the Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area. The amended standard 4a is based on security and intermittent refuge areas hiding cover notwithstanding. However, there are cover guidelines associated with the amendment. The Telegraph project is consistent with these cover guidelines (See the Rocky Mountain Elk section in the FEIS, Regulatory Framework and Forest Plan Consistency). There are no other hiding cover standards associated with the project. **(11-11)** Each Specialist report contains a description of the cumulative effects of these activities on the various resources and effects are summarized in the FEIS. A detailed cumulative effects table of activities considered both temporal and spatial is detailed in Appendix C of the FEIS and resource specific tables are located in the project record. (**11-12**) Forest and FWP staff conducted a field visit to the Telegraph project area on August 10, 2015 (See memo in the project record). FWP also provided comments on the DEIS which are disclosed in the Response to Comments appendix to the FEIS. **(11-13)** The Montana DEQ has reviewed the draft EIS and submitted comments, these comments were

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F. Disclose the biological assessment for the candidate, threatened, or endangered species with potential and/ or actual habitat in the Project area;(**11-14)** G. Disclose the biological evaluation for the sensitive and management indicator species with potential and/ or actual habitat in the Project area**;(11-15)**	addressed and analysis has been updated, which are part of the project record. **(11-14)** The Telegraph Project BA is prepared in accordance with the following guidance and direction: • Section 7(a)(2) of the Endangered Species Act of 1973 (as amended), • 50 CFR § 402.12 (Interagency Cooperation, Biological Assessments), • Endangered Species Consultation Handbook (USFWS and NMFS, March 1998). The BA is being prepared for the agency's preferred alternative. **(11-15)** Threatened fish species and R1 Forest Sensitive Species including MIS are disclosed in the Fisheries, Wildlife, and Plants Biological Evaluation. The Biological Evaluation for sensitive fish, wildlife and plant species is included in the FEIS.
H. Disclose the snag densities in the Project area, and the method used to determine those densities**;(11-16)** I. Disclose the current, during-project, and post-project road densities in the Project area;(**11-17)** J. Disclose the Helena National Forest's record of compliance with state best management practices regarding stream sedimentation from ground disturbing management activities;(**11-18)** K. Disclose the Helena National Forest's record of compliance with its monitoring requirements as set forth in its Forest Plan**;(11-19)** L. Disclose the Helena National Forest's record of compliance with the additional monitoring requirements set forth in previous DN/FONSIs and RODs on the Helena National Forest**;(11-20)**	**(11-16)** Forested Habitats of Special Concern in Chapter 3 of the FEIS describes the impacts on snag densities and the methods used to analyze them. Snag data are derived from the Summary Database. Methodologies and assumptions associated with these data are described in the following documents: R1 Grid Intensification using CSE Protocols – Field Procedures (USDA 2010), R1 Multi-level Vegetation Classification, Mapping, Inventory, and Analysis System (USDA 2009b), and FIA Field Guides, Methods, and Procedures at http://fia.fs.fed.us/library/field-guides-methods-proc/.. Snag data are also derived from the Estimates of snag densities for eastside forests in the Northern Region (Bollenbacher et al. 2008). **(11-17)** Current road densities and post-project road densities are the same. Road densities during project implementation, as well as current and post-project, are described in the Grizzly Bear section in the FEIS. **(11-18)** Please see the Forest Plan Monitoring Report referenced in the Hydrology and Soils specialist reports, and included in the Project Record. **(11-19)** Forest Plan Annual Monitoring Reports from 2005 through 2009 are posted on the Helena National Forest public website. See: http://www.fs.usda.gov/main/helena/landmanagement/planning . Additional monitoring information since 2009 related to this project's activities are included in each resource specialist's project record. (**11-20)** A review of the compliance of monitoring plans directly associated with past projects in the Telegraph project area indicates that the Forest-wide Hazardous Tree Removal and Fuels Reduction Project is the only past project within the defined monitoring plan. However, Forest Plan monitoring requirements remain in place for all projects (where applicable) whether or not they are clearly articulated in the respective NEPA

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M. Disclose the results of the field surveys for threatened, endangered, sensitive, and rare plants in each of the proposed units**;(11-21)** N. Please formally consult with the US FWS on the impacts of this project on candidate, threatened, or endangered species and plants**;(11-22)**	document. The results of past Forest Plan monitoring efforts are located in each specialist's project record. **(11-21)** Sensitive plant survey results are included in the Plants Biological Evaluation. **(11-22)** The Telegraph Project BA is prepared in accordance with the following guidance and direction: • Section 7(a)(2) of the Endangered Species Act of 1973 (as amended), • 50 CFR § 402.12 (Interagency Cooperation, Biological Assessments), • Endangered Species Consultation Handbook (USFWS and NMFS, March 1998) The analysis in the FEIS for the Canada lynx has led to the conclusion that the action alternatives 'may affect and are likely to adversely affect' lynx. As such formal consultation will occur with respect to the effects of project activities on lynx. Meanwhile, the determination for grizzly bears is 'may affect not likely to adversely affect' which requires informal consultation.
O. Please conference with the US FWS on the impacts of this project on lynx critical habitat and potential lynx critical habitat**;(11-23)** P. Will this Project exacerbate existing noxious weed infestations and start new infestations?(**11-24)** Q. Do unlogged old growth forest store more carbon than the wood products that would be removed from the same forest in a logging operation?(**11-25)** R. What is the cumulative effect of National Forest logging on U.S. carbon stores? How many acres of National Forest lands are logged every year? How much carbon is lost by that logging**?(11-26)** S.Is this Project consistent with "research recommendations (Krankina and Harmon 2006) for protecting carbon gains against the potential impacts of future climate change? That study recommends "[i]ncreasing or maintaining the forest area by avoiding deforestation," and states that "protecting forest from logging or clearing offer immediate benefits via prevented emissions." That study also states that "[w]hen the initial condition of land is a productive old-growth forest, the conversion to forest plantations with a short harvest rotation can have the opposite effect lasting for many decades . . . ." The study does state that thinning may have a beneficial effect to stabilize the forest and avoid stand-replacing wildfire, but the study never defines thinning. In this Project, where much of the logging is clear-cutting and includes removing large trees without any diameter limit, and where the removal of small diameter surface and ladder fuels is an unfunded mandate to the tune of over $3 million dollars, it is dubious whether the prescriptions are	**(11-23)** The project does not occur in lynx critical habitat; therefore consultation is not required regarding critical habitat. See the FEIS, Canada Lynx, Affected Environment, Lynx Management, Critical Lynx Habitat section. (**11-24)** The activities proposed for this project may increase noxious weeds in the short term. The weeds report addresses the expected response of weeds from the proposed activities, including chemical control treatments, and discloses that weeds would not likely increase if the vegetation treatments are preceded and followed by weed control treatments. **(11-25), (11-26) & (11-27)** Impacts on carbon stores are outlined in the Forest Carbon Cycling and Storage Background Report. Thinning proposed in his project would generally remove smaller trees.

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the same type of "thinning" envisioned in Krankina and Harmon (2006)**.(11-27)**	
T. Please list each visual quality standard that applies to each unit and disclose whether each unit meets its respective visual quality standard. A failure to comply with visual quality Forest Plan standards violates NFMA**.(11-28)**	**(11-28)** Visual quality objectives (VQO) are stated for each management area. Management areas (MA) within the project area include L1, M1, T1, T5 and W1. Management areas T-1, I-1, T-5 would generally follow guidelines for the maximum modification VQO. The portions of these MA's (if any) that are within the sensitive viewing areas of the roads, trails and areas listed in Appendix B would be managed to meet more restrictive VQOs as noted in the Forest Plan appendix. The general visual quality objective for M-1 is retention. Less restrictive VQOs may be considered on a case-by-case basis, if project level planning on an adjacent MA affects M-1 MA. Finally, W-1 would generally follow guidelines for the partial retention VQO. See Visuals section of the FEIS for unit specific details where warranted.
U. For the visual quality standard analysis please define "ground vegetation," i.e. what age are the trees, "restablishes," "short-term," "longer term," and "revegetate."**(11-29)** V. Runoff that flows from logging roads into a system of ditches, culverts, and channels and then into forest streams and rivers constitutes a point source under the Clean Water Act and requires a National Pollutant Discharge Elimination System ("NPDES") permit. Please disclose all such locations in the Project area and demonstrate that you have complied with the NPDES permitting process for these point sources.**(11-30)** W. Please disclose whether you have conducted surveys in the Project area for this Project for wolverines, pine martins, northern goshawk and lynx, grizzly bears as required by the Forest Plan.(**11-31)** X. Please disclose how often the Project area has been surveyed for wolverines, pine martins, northern goshawks, grizzly bears and lynx. Is it impossible for a wolverines, pine martins, northern goshawks, grizzly bears and lynx to inhabit the Project area?**(11-32)**	**(11-29)** The visual quality standards and definitions are included in the Visuals section in the FEIS and the FEIS glossary. **(11-30)** The HLCNF will apply for any and all permits required by local, state, and federal laws and regulations prior to project implementation. **(11-31)** Surveys have been conducted in the project area for wolverines, marten, and lynx as part of the Forest's partnership with Wild Things Unlimited (See the DEIS and FEIS at Lynx Occurrence in and around the Project Area, Wolverine Status in the Project Area, and Population Status and Habitat in the Project Area, Local Population [for martens]). FWP has also conducted regular winter tracking surveys south of Highway 12 (See also Population Status and Habitat in the Project Area, Local Population [for martens]). See also the project record for survey reports. Goshawks have been monitored in the Divide Landscape and the project area for several years as described in the DEIS and FEIS at Population Status and Habitat in the Project Area, Goshawk Monitoring and Potential Population Density. **(11-32)** Survey data indicate that wolverines, martens, goshawks, grizzly bears, and lynx occur or have occurred in the project area.
Y. Would the habitat be better for wolverines, pine martins, northern goshawks, grizzly bears and lynx if roads were removed in the Project area?(**11-33)**	**(11-33)** The action alternatives all include road decommissioning of temporary roads constructed for project activities. However, Alternatives 3 and 4 also include an additional 32.8 miles of road decommissioning. The analysis in the DEIS and FEIS describes the effects of temporary roads and road decommissioning on wolverines (See the Environmental Consequences in the Wolverine section, Direct and Indirect Effects and Cumulative Effects); on martens (See the Environmental Consequences in the American Marten section, Direct and Indirect Effects and Cumulative Effects);

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	goshawks (See the Environmental Consequences in the Northern Goshawk section, Direct and Indirect Effects and Cumulative Effects); grizzly bears (See the Environmental Consequences in the Grizzly Bear section, Direct and Indirect Effects and Cumulative Effects); and Canada Lynx (See the Environmental Consequences in the Canada Lynx section, Direct and Indirect Effects and Cumulative Effects). See also the Affected Environment for Wolverines (Population Parameters and Habitat Relationships, Influence of Access Routes, Influence of Timber Management, and Influence of Recreation sections); American Marten (Marten Populations section); Grizzly Bear (Habitat Use, Behavior, Movements and Human Influences sections); and Canada Lynx (Lynx Occurrence in and around the Project Area section). The Telegraph project is not a travel plan (See the Purpose and Need in the FEIS); rather it includes road decommissioning as part of the Divide Travel Plan Decision (March 2016) implementation.
Z. What is the U.S. FWS position on the impacts of this Project on wolverines, pine martins, northern goshawks, grizzly bears and lynx? Have you conducted ESA consultation**?(11-34)** AA. Please provide us with the full BA for the wolverines, pine martins, northern goshawks, grizzly bears and lynx**.(11-35)**	**(11-34)** Consultation with the USFWS will commence upon identification of a preferred alternative. **(11-35)** The biological assessment will be provided upon completion and initiation of consultation with the USFWS. The only listed species in the project area (wildlife) are grizzly bears and lynx. Wolverines, martens, and goshawks are not listed species (see the January 20, 2016 USFWS species list in the project record).
BB. What is wrong with uniform forest conditions**?(11-36)** CC. Has the beetle kill contributed to a diverse landscape? (**11-37)** DD. Why are you trying to exclude stand replacement fires when these fires help aspen and whitebark pine? **(11-38)**	**(11-36)** The sustained homogeneity of age/size class and the extent of high amounts of downed woody fuels may result in conditions not resilient to landscape level disturbances. In the event of a severe wildfire, the seed source currently provided by MPB-killed trees in some areas could be lost. Existing high density forests could be replaced by fire or bark beetles, more rapidly in the case of fire. The likelihood of these interactions is highest with the No Action Alternative because it perpetuates the existing condition on the landscape The limited benefits and consequences of homogeneity are described in the Forested Vegetation Specialist Report and Purpose and Need for Action portions of the FEIS. **(11-37)** Effects from the tree mortality as a result of the mountain pine beetle mortality are discussed in the Vegetation Existing Condition section of the FEIS. **(11-38)** This project is design to modify fire behavior that would complement and assist our pre-determined wildfire response and suppression tactics and strategies. See Purpose and Need for Action and the Fire and Fuels Specialist Report **(11-39)** A literature review was completed for restoration of whitebark pine including opportunities

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EE. Please disclose what is the best available science for restoration of whitebark pine. **(11-39)** FF. Disclose the level of current noxious weed infestations in the Project area and the cause of those infestations;**(11-40)**	for restoration. The Forested Habitats of Special Concern section in the FEIS was updated to reflect field surveys and updated literature. **(11-40**) Inventory of weed populations across the project area were conducted during the field season of 2015. This information was used to update the analysis and is included in the Noxious Weeds Specialist Report and included in the Noxious Weed section of the FEIS.
GG. Disclose the impact of the Project on noxious weed infestations and native plant communities**;(11-41)** HH. Disclose the amount of detrimental soil disturbance that currently exists in each proposed unit from previous logging and grazing activities**;(11-42)** II. Disclose the expected amount of detrimental soil disturbance in each unit after ground disturbance and prior to any proposed mitigation/remediation**;(11-43)** JJ. Disclose the expected amount of detrimental soil disturbance in each unit after proposed mitigation/ remediation**;(11-44)** KK. Disclose the analytical data that supports proposed soil mitigation/remediation measures**;(11-45)** LL. Disclose the timeline for implementation**;(11-46)** MM. Disclose the funding source for non-commercial activities proposed**;(11-47)** NN. Disclose the current level of old growth forest in each third order drainage in the Project area**;(11-48)** OO. Disclose the method used to quantify old growth forest acreages and its rate of error based upon field review of its predictions**;(11-49)**	**(11-41)** The noxious weed report has been updated incorporating the updated noxious weed inventory. The effects of the specific treatment activities on noxious weeds are described in the Noxious Weeds Specialist Report and included in the Noxious Weed section of the FEIS. **(11-42)** As directed by FSM 2550.5, evaluation of existing and predicted detrimental soil disturbance has been evaluated by activity area (unit). See Soils Specialist's Supporting Documents **(11-43)** As directed by FSM 2550.5, evaluation of existing and predicted detrimental soil disturbance has been evaluated by activity area (unit). See Soils Specialist's Supporting Documents **(11-44)** As directed by FSM 2550.5, evaluation of existing and predicted detrimental soil disturbance has been evaluated by activity area (unit). See Soils Specialist's Supporting Documents **(11-45)** Soils- As directed by FSM 2550.5, evaluation of existing and predicted detrimental soil disturbance has been evaluated by activity area (unit). See Soils Specialist's Supporting Documents **(11-46)** An implementation strategy has been developed and is included in the draft Record of Decision. **(11-47)** The sale of timber products will help fund the other components of the purpose and need including: maintaining and improving watershed values, improve the mix of vegetation composition and structure across the landscape that is diverse, resilient, and sustainable to wildfire and insects, enhance and restore aspen and whitebark pine species and habitat. The costs of activities associated with the removal of timber products including incorporating all design features are financially feasible. **(11-48) & (11-49)** The methodology and analysis for old growth forest has been completed and is discussed in the Forested Habitats of Special Concern in Chapter 3 of the FEIS. (11-50) A reconstruction of past conditions in the analysis area is beyond the scope of this analysis. Maintaining current and promoting future habitats are

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PP. Disclose the historic levels of mature and old growth forest in the Project area**;(11-50)** QQ. Disclose the level of mature and old growth forest necessary to sustain viable populations of dependent wildlife species in the area;(11-51)	addressed in "Habitats of Special Concern"" in Chapter 3 of the FEIS." (11-51) The Helena National Forest Plan identifies Management Indicator Species, or MIS, as part of requirements set forth through the National Forest Management Act (See the FEIS, Wildlife section, Regulatory Framework, National Forest Management Act). Although this comment does not specifically mention MIS, the Forest Plan identifies three species that are associated with old growth or mature forest. These are: goshawk and pileated woodpecker (old growth) and marten (mature forest). The response to this comment assumes that the comment is related to these MIS.
	Habitat thresholds for goshawk, pileated woodpecker, and marten are identified in the Viability Appendix in the FEIS. Samson, in his Habitat Estimates For Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher (see Samson 2006 in the project record), articulates a process for calculating habitat thresholds necessary to maintain viable populations in Region One of the Forest Service. Samson, in his Conservation Assessment of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region, USDA Forest Service (see Samson 2006 in the project record), defines a 'population' for each of the aforementioned species. In other words, the project level is not the appropriate scale to determine viability for the goshawk, pileated woodpecker, and marten. The viability analysis in the FEIS concludes that habitat continues to remain above critical thresholds for goshawks, pileated woodpeckers, and marten at the Forest scale. However, the FEIS does include an analysis of the potential home ranges the project area currently supports and the effects of the action alternatives on that availability. See the Conclusions section for American Marten, Northern Goshawks and Pileated Woodpeckers in the FEIS.
RR.Disclose the amount of mature and old growth forest that will remain after implementation**;(11-52**) SS. Disclose the amount of current habitat for old growth and mature forest dependent species in the Project area**;(11-53)** TT. Disclose the amount of habitat for old growth and mature forest dependent species that will remain after Project implementation;(**11-54)**	**(11-52)** The methodology and analysis for old growth forest has been completed and is discussed in the Forested Habitats of Special Concern in Chapter 3 of the FEIS. **(11-53)** Current available habitat for American Marten, Northern Goshawk, and Pileated Woodpecker is described in the DEIS and FEIS at Local Habitat Capability (Marten), Habitat Analysis (Northern Goshawk), and Project Area Habitat and Populations (Pileated Woodpecker). (11-54) The amount of remaining habitat, post project implementation is described in the DEIS and FEIS at Conclusions (Marten), Alternatives 2, 3, and 4, Direct

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UU. Disclose the method used to model old growth and mature forest dependent wildlife habitat acreages and its rate of error based upon field review of its predictions;(**11-55)**	and Indirect Effects, and Conclusions (Goshawk), and Conclusions (Pileated Woodpecker). **(11-55)** Methodologies for modeling habitat for old growth and mature forest dependent species is described in the DEIS and FEIS (see table Assumptions, information used, and methodologies to determine effects to wildlife). Confidence intervals (or 'rate of error') for habitat thresholds are provided in the Viability Analysis appendix and are based on a 90% interval (see also Bush 2014 and Bush and Reyes 2015 in the project record). The 'rate of error' for habitat derived from R1-VMap is reported in the Assumptions, information used, and methodologies to determine effects to wildlife in the marten, goshawk, and pileated woodpecker sections and is based on the Helena - Lewis & Clark National Forest – VMap 2014 Tree Dominance Type (DOM40), Tree Canopy Cover, Tree Size Class, and Lifeform Accuracy Assessment (Brown 2014) as summarized in the R1-VMap and FIA Intensified Grid Data section. See also the project record for complete document.
VV. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security currently available in the area;(**11-56)** WW. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security during Project implementation;(**11-57)** XX. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security after implementation**;(11-58)**	**(11-56**) Elk hiding cover, winter range, and security are described in the Affected Environment, Habitat Considerations sections in the DEIS and FEIS. Moose habitat is described in the Topics not Analyzed in Detail section; discussions of site-specific project effects on riparian habitat and vulnerability of elk to hunting apply to moose as well (see the Wildlife Analysis Approach appendix). In response to this comment, additional habitat information is provided in the Moose section of the FEIS. **(11-57)** Big game security during project implementation is described in the Elk Security during the Hunting Season section in the FEIS and is applicable to elk and moose (as described above in 11-56). There are no changes to hiding cover during project implementation; changes to hiding cover are manifested post-implementation (see 11-58 below). There are no changes to the amount of winter range during project implementation. Winter range is a fixed landscape attribute based on FWP data (see GIS project record). Effects to elk on winter range during project implementation is described in the Environmental Consequences for the action alternatives in the Winter Range and Thermal Cover section. **(11-58)** Big game security post project implementation is described in the Elk Security during the Hunting Season section in the FEIS and is applicable to elk and moose (as described above in 11-56). The amount of hiding cover post implementation is disclosed in the Regulatory Framework and Forest Plan Consistency section in the FEIS.

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YY. Disclose the method used to determine big game hiding cover, winter range, and security, and its rate oferror as determined by field review;(**11-59)**	**(11-59)** The methodology used to describe big game hiding cover, winter range, and security is described in the Assumptions, information used, and methodologies to determine effects to wildlife along with the rate of error for hiding cover only. See the metadata for elk and moose winter range maps in the project record for accuracy information. See also response to (11-55).
ZZ. Disclose and address the concerns expressed by the ID Team in the draft Five-Year Review of the Forest Plan regarding the failure to monitor population trends of MIS, the inadequacy of the Forest Plan old growth standard, and the failure to compile data to establish a reliable inventory of sensitive species on the Forest; **(11-60)**	**(11-60)** The methodology for describing old growth is located in the Assumptions, information used, and methodologies to determine effects to wildlife and in the 'Forested Habitats of Special Concern' report in the FEIS. Methodologies for sensitive species surveys and monitoring is also described in the Assumptions, information used, and methodologies to determine effects to wildlife section for those sensitive species analyzed for the project. Data collected during surveys and monitoring is in the project record.
AAA. Disclose the actions being taken to reduce fuels on private lands adjacent to the Project area and how those activities/or lack thereof will impact the efficacy of the activities proposed for this Project**;(11-61)**	**(11-61)** As stated in the cumulative effects analysis for the fire and fuels resource, fuels reduction on private lands would be beneficial if prescribed fire or fine fuels reduction was applied post-harvest. Recent timber harvests adjacent to the project area still function as effective fuel reduction areas, altering crown connectivity enough to affect the sustainability of crown fire within these stands.
BBB. Disclose the efficacy of the proposed activities at reducing wildfire risk and severity in the Project area in the future, including a two-year, five-year, ten year, and 20-year projection;(**11-62)**	**(11-62)** The proposed mechanical and prescribed burn treatments in all action alternatives would reduce existing surface fuel loading levels, remove standing dead and break up contiguous vegetation to create landscape patterns that alter fire spread and provide for firefighter and public safety. Treated areas, in general, would provide places where firefighters can more safely and effectively perform suppression actions thereby limiting the potential for high-intensity fire to spread within and towards the WUI or the Tenmile watershed. Removal of the dead overstory would alleviate the risk of increased future fuel loadings and risk to firefighters/forest workers from falling dead trees. As stated in the assumptions in the Fire and Fuels Specialist Report, application of prescribed fire in the future will be necessary to maintain vegetation conditions and retain fire as a process in fire-adapted ecosystems. Both maintenance of treated units and treatment of new units are important to optimize treatment patterns over the landscape (Finney et al. 2005; Finney et al. 2006; Reinhardt et al. 2008; Omi and Martinson 2004). Treatments are effective for about ten years as related to potential fire behavior (Finney et al. 2006b; Omi et al. 2007) and a rate of twenty percent treatment per decade has been found most effective (Finney et al. 2006b). Maintenance may be required to maintain resiliency to future disturbances once the desired conditions have been achieved. The need for maintenance treatments would be determined through resource monitoring. Monitoring may identify the need for additional analysis prior to maintenance treatment.

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	Application of prescribed fire in the future will likely be necessary to maintain vegetation conditions and retain fire as a process in fire-adapted ecosystems.
CCC. Disclose when and how the Helena National Forest made the decision to suppress natural wildfire in the Project area and replace natural fire with logging and prescribed burning;(**11-63)**	**(11-63)** As stated in the Regulatory Framework Section of the Fire and Fuels Specialist Report, the project area is currently listed as a Fire Management Unit (FMU) 2 within the Helena National Forest Fire Management Plan. For the majority of fires in FMU2, routinely consider managing unplanned ignitions to meet resource and human value protection objectives. In all cases, provide for firefighter and public safety at all times. Where FMU2 overlaps with Wildland Urban Interface (WUI) consider control and contain strategies to minimize risk to life and property. (Helena National Forest Fire Management Plan 2013 - 3.2.2B FMU2 Guidance) However, with the close proximity to the upper Tenmile watershed and current fuel conditions in the project area, expected suppression methods call for rapid response and aggressive suppression strategies. The suppression methods and management of this area will not change with either alternative.
DDD. Disclose the cumulative impacts on the Forest wide level of the Helena National Forest's policy decision to replace natural fire with logging and prescribed burning**;(11-64)** EEE. Disclose how Project complies with the Roadless Rule;(**11-65)** FFF. Disclose the impact of climate change on the efficacy of the proposed treatments;**(11-66)** GGG. Disclose the impact of the proposed project on the carbon storage potential of the area; **(11-67)**	**(11-64)** As stated in the Introduction Section of the Fire and Fuels Specialist Report, the spatial scale of cumulative effects analysis should be consistent with the terrestrial or aquatic processes that can be reasonably affected by the proposed treatments, for this reason the cumulative effects boundary is set at the project boundary. The cumulative effects analysis for the fire and fuels resources includes past, current, and reasonably foreseeable future activities as these activities influence the fire/fuels resource. Most activities have little influence on fire/fuels, with the exception of harvest, thinning, prescribed fire, wildfire, and livestock and wildlife grazing that change the vegetation. Management of wildfires cannot be predicted; wildfires within the project area would be managed according to direction in the Forest Plan, Helena Fire Management Plan, and applicable laws and policies. See Appendix C of the Fire and Fuels Specialist Report for detailed cumulative effects analysis. **(11-65)** This FEIS includes a Roadless Expanse Resource reports which describes how the project would comply with the Roadless Rule. **(11-66)** Potential impacts of climate change and the need for adaptive management strategies are addressed in the Forested Vegetation and Forested Habitats of Special Concern sections in Chapter 3 of the FEIS **(11-67)** Impacts on carbon stores are outlined in the Forest Carbon Cycling and Storage Background Report.

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HHH. Disclose the baseline condition, and expected sedimentation during and after activities, for all streams in the area; **(11-68)**	**(11-68)** Please refer to the Hydrology specialist report for an analysis of potential sediment delivery to streams from roads and proposed treatment units.
III. Disclose maps of the area that show the following elements (**11-69)** 1. Past, current, and reasonably foreseeable logging units in the Project area; 2. Past, current, and reasonably foreseeable grazing allotments in the Project area; 3. Density of human residences within 1.5 miles from the Project unit boundaries; 4. Hiding cover in the Project area according to the Forest Plan definition; 5. Old growth forest in the Project area; 6. Big game security areas; 7. Moose winter range;" Some of these questions were answered but many were not in violation of NEPA, NFMA, and the Clean water Act, the APA and the ESA. In order to satisfy NEPA, the Forest Service must take a hard look at the environmental impacts of this Project. A court will enjoin a project where the Forest Service has failed to demonstrate compliance with binding legal standards. Native Ecosystems Council v. U.S. Forest Service, 418 F.3d 953, 961 (9th Cir. 2005). A court will also enjoin a project if the agency fails to discuss an important issue. Oregon Natural Desert Ass'n v. Bureau of Land Management, 531 F.3d 1114, 1142 (9th Cir. 2008). Therefore, in order to provide a public analysis that complies with the Forest Service's legal obligations, please publish the following questions and the answer(s) to each question in the final EIS so that the public and decision-makers will be adequately informed of the impacts of the proposed Project: 1.How effective have BMPs been at stopping (i.e., preventing) new weed infestations from starting during logging and related road operations?(**11-70)** 2. Is it true that new roads are the number one cause of new noxious weed infestations? **(11-71)**	**(11-69)** As appropriate for analysis these maps will be included in the FEIS and/or specialist reports in the project record. **(11-70)** BMP effectiveness at preventing new weed infestations has not been measured quantitatively. (**11-71)** New roads do provide optimum conditions for noxious weeds to colonize new areas; however, I don't believe one activity has been identified as the number one cause of new weed infestations.
3. Why isn't the Forest Service considering a Forest Plan amendment in this Project to amend the Forest Plan to include binding legal standards that address noxious weeds? **(11-72**)	**(11-72)** Each Specialist report contains a description of the cumulative effects of these activities on the various resources and effects are summarized in the FEIS. A detailed cumulative effects table of activities considered both temporal and spatial is detailed in Appendix C of the FEIS and resource specific tables are located in the project record.

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4. Is it true that noxious weeds are one of the top threats to biodiversity on our National Forests?**(11-73)** 5. How can the Forest Service be complying with NFMA's requirement to maintain biodiversity if it has no legal standards that address noxious weeds? **(11-74)** 6. Will this Project address all Project area BMP needs, i.e. will the BMP road maintenance backlog and needs from this Project all be met by this Project? **(11-75)** 7. The EA is not clear if what MIS were found and not found. What MIS did you find, how many and how did you look for these MIS? **(11-76)**	**(11-73)** Yes, it is true that noxious weeds are a major threat to biodiversity on National Forests. As this comment letter describes it: Invasive plant species, also called noxious weeds, are one of the greatest modern threats to biodiversity on earth. Noxious weeds cause harm because they displace native plants, resulting in a loss of diversity and a change in the structure of a plant community. By removing native vegetative cover, invasive plants like knapweed may increase sediment yield and surface runoff in an ecosystem. As well knapweed may alter organic matter distribution and nutrient through a greater ability to uptake phosphorus over some native species in grasslands. Weed colonization can alter fire behavior by increasing flammability: for example, cheatgrass, a widespread noxious weed on the Forest, cures early and leads to more frequent burning. Weed colonization can also deplete soil nutrients and change the physical structure of soils. **(11-74)** Controlling the spread of noxious weeds helps to maintain biological diversity by preventing replacement of native plants by non-native invasive plants. **(11-75)** There are multiple project design features that address road and harvest area erosion and sedimentation concerns. The rationale behind these is documented in the respective specialist reports. The *Mitigation Measures* section of the Hydrology specialist report further describes proposed improvements to stream crossings and roads, while the subsequent analysis discusses the predicted effects of this work. The design features are also listed in Chapter 2 of the FEIS and Appendix C. (**11-76)** The MIS species analyzed in detail in the DEIS and FEIS are: American marten, hairy woodpecker, northern goshawk, and pileated woodpecker (see Forest Plan Management Indicator Species section). In addition to those species analyzed in that section, other MIS analyzed include Rocky Mountain elk, mule deer, grizzly bear, and gray wolf. Appendix A (Wildlife Analysis Approach) of Appendix D (Wildlife Appendices) in the DEIS and in the FEIS identifies those MIS species suspected to occur in the project area and which ones are carried forward in the analysis. Of those carried forward in the analysis, the survey methodologies are described in the Assumptions, information used, and methodologies to determine effects to wildlife section. Survey results can be found in the respective section for the MIS in the project area and/or in the project record.
8. How will the decreased elk security and thermal cover affect wolverines and have you formally consulted with the FWS on the effects of this project on wolverines? **(11-77)**	**(11-77)** The environmental consequences section for the Wolverine describes effects to wolverines in terms of acres of primary habitat affected, activities within dispersal and connectivity habitat, and food availability and includes a discussion of effects to elk as a

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The wolverine, which was chosen by the Forest Service as a management indicator species for the project area, was recently determined to be warranted for listing under the ESA. 75 Fed. Reg.78030 (Dec. 14, 2010). It is currently a candidate species, waiting for work to be completed on other species before it is officially listed. The USFWS found that "[s]ources of human disturbance to wolverines include . . . road corridors, and extractive industry such as logging . . .." .The Forest Service admits that the wolverine and/or its habitat are present within the project area and would be impacted by the project. The Forest Service must go through ESA consultation for the wolverine for this project. **(11-78)** Last year, USFWS found "substantial scientific or commercial information indicating that listing a [Distinct Population Segment] of fisher in the [Northern Rocky Mountains] of the United States [under the ESA] may be warranted." 75 Fed. Reg. 19925 – 19935 (April 16, 2010). In particular, USFWS found that listing the Northern Rockies fisher under the ESA may be warranted in primary part "due to the present and potential future modification and destruction of habitat from commercial timber harvest and commercial wood production by methods that may prevent succession to the mature forest stages preferred by fishers." The Forest Service admits that the fisher and/or its habitat are present within the project area and would be impacted by the project. The Forest Service did no ESA consultation for the fisher for this project. **(11-79)**	wolverine food source (see FEIS, Environmental Consequences). The wolverine is not identified on the USFWS species list under any consideration (see the January 20, 2016 list in the project record); therefore consultation is not required (see Proposed ESA Listing section in the FEIS). **(11-78)** The wolverine is not identified on the USFWS species list under any consideration (see the January 20, 2016 list in the project record); therefore consultation is not required (see Proposed ESA Listing section in the FEIS). **(11-79)** [It appears that AWR may be utilizing a dated comment in this specific comment on Telegraph. They state that 'Last year, USFWS found "substantial scientific or commercial information indicating that listing a [Distinct Population Segment] of fisher in the [Northern Rocky Mountains] of the United States [under the ESA] may be warranted."' They reference 2010. I am providing the petition history here as background as well as responding to their comment that consultation is required.] In 2011, the USFWS published a 12-month finding following a full status review of fishers in the Northern Rockies that concluded listing the fisher as endangered or threatened was not warranted (Federal Register Vol. 76, No. 126, Thursday, June 30, 2011, 38504 – 38532). On September 23, 2013, the USFWS received a petition dated September 23, 2013, from the Center for Biological Diversity, Defenders of Wildlife, Friends of the Bitterroot, Friends of the Clearwater, Western Watersheds Project, and Friends of the Wild Swan, requesting that the fisher in its U.S. Northern Rocky Mountains (USNRMs) range be listed as threatened or endangered under the Act. The 2015 finding addressed this petition and found that the petition "presents substantial scientific or commercial information indicating that the petitioned action may be warranted for fishers" (see Federal Docket No. FWS-R6-ES-2015-0104, 90-day finding on a petition to list a distinct population segment of fisher in its united states northern rocky mountains range as threatened or endangered under the Endangered Species Act in the project record). There are no requirements under the Endangered Species Act, Section 7 (Interagency cooperation) that the action agency initiate consultation for petitioned species (see Public Law 93–205, approved Dec. 28, 1973, 87 Stat. 884, as amended through Public Law 107–136, Jan. 24, 2002 in the project record).
9. The economic analysis seems to have not included all of the costs. The EA states the NEPA costs are not included in the revenue estimate. Why not? **(11-80)**	**(11-80)** Econ- The commenter has mistaken that the Telegraph project is an Environmental Assessment. The Telegraph Vegetation Project is analyzed as an

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	EIS. The Telegraph FEIS does not mention that NEPA costs are included in a revenue estimate.
11. Why aren't you proposing to replace more culverts that are at risk of failure? **(11-81)**	**(11-81)** Culverts along project haul routes that are undersized, damaged, or act as barriers to aquatic organism passage were identified for upgrade. In addition, all proposed road decommissioning will entail removing culverts and restoring natural stream channels.
12. Are the watersheds in the project area functioning at risk, functioning at unacceptable risk, or in a properly functioning condition? **(11-82)**	**(11-82)** Please refer to Table 3 in the Hydrology specialist report, which provides all available data on Properly Functioning Condition surveys conducted in grazing allotments in project-area watersheds. In addition, the *Affected Environment* section of the Hydrology specialist report has been updated to include the watershed condition classification for each project-area 6th-order HUC watershed, as determined under the USFS Watershed Condition Framework. This information is also included in the FEIS in the Hydrology section.
13. Have you checked to see if the project area qualifies as lynx critical habitat as required by the U.S. District Court? **(11-83)**	**(11-83)** The USFWS Final Rule (50 CFR Part 17) designating "critical" habitat for lynx in the contiguous U.S. (Federal Register, Vol. 74, No. 36, Feb. 25, 2009) has been in effect since March 2009. In 2014, USFWS published a revised designation of critical habitat (Federal Register, Vol. 79, No. 177, Sep. 12, 2014). The revised rule did not change any designation on the Helena National Forest. See the Affected Environment section for the Canada Lynx, Critical Lynx Habitat and the project record for the Federal Register references). The project area is not in critical habitat.
14. Have you formally consulted with the FWS on the impacts of this project and the revised forest plan on lynx? (11-84)	**(11-84)** The lynx analysis in the DEIS and FEIS concludes that the project may impact lynx and is likely to adversely impact lynx (see Canada Lynx, Environmental Consequences, Conclusions section). As such formal consultation is required and will be initiated upon selection of a preferred agency alternative. Consultation was completed for the 'revised forest plan' – i.e. the Northern Rockies Lynx Management Direction or NRLMD – on March 19, 2007 (see project record).
15. Do unlogged old growth forest store more carbon than the wood products that would be removed from the same forest in a logging operation? **(11-85)**	**(11-85)** Old growth forests that are unlogged will store more carbon than the wood products that would be removed from the same forest in a logging operation. This project would not harvest old growth.
16. Does the project comply with the Regional visual standards? **(11-86)**	**(11-86)** Yes. See Visuals section of the FEIS.
17. Which wildlife species and ecosystem processes, if any, does this proposed logging and fire-proofing or more fire resilient forest benefit? **(11-87)**	**(11-87)** Several wildlife species benefit from vegetation management particularly when that management mimics natural processes and creates a mosaic of forested age classes and openings. A landscape with a complex matrix of mature conifer forest, new clearcuts, sapling thickets, aspen clones, burns, and dry parks may provide a good habitat mix for more

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18. Which species and processes does proposed logging and fire-proofing or more fire resilient forest harm? **(11-88)**	wide ranging habitat generalists (elk, mule deer, moose, black bears, grizzly bears, bobcats, wolverines, robins, Townsend's solitaires) for example. For examples in the DEIS and FEIS, see The Nature of Fragmentation section in the FEIS; Mule Deer, Conclusions; Grizzly Bear, Conclusions; Snags, Direct and Indirect Effects; Goshawks, Environmental Consequences, Home Range/Foraging Habitat Analysis, and Moose, among others. Seemingly paradoxical, the same habitats and/or species that could benefit from vegetation management and subsequent landscape diversity may also benefit from creating resilient forests by 'fire-proofing' forests. Examples in the DEIS and FEIS include Grizzly Bear, Effects Common to All Action Alternatives; Goshawks, Conclusions; and Pileated Woodpecker, Conclusions; among others. **(11-88)** As with comment 11-87, several species that occur in the project area may be negatively impacted by logging and/or 'fire-proofing', although it's not a one size fits all paradigm. Species that may be negatively impacted in the short term could benefit from logging in the long term due to the mosaic of forest structure that is created through vegetation manipulation. Other species that are strongly associated with high severity wildfires (black-backed woodpeckers) may experience a decrease in potential habitat in the project area. See response to 11-87 and Sensitive Species, Black-backed Woodpecker section, among others.
19. What about the role of mixed severity and high severity fire – what are the benefits of those natural processes? **(11-89)**	**(11-89)** Mixed and high-severity fires can be beneficial to several species. For example, see Mule Deer, Conclusions; Snags and Woody Debris; Goshawks, Effects Common to All Action Alternatives; and Mature and Early Conifer Forest, Mature Conifer Forest and Fire and Fuels section in the FEIS.
20. How have those processes (mixed and high severity fire) created the ecosystems we have today?(**11-90)** 21. Over how many millennia have mixed and high severity fire been occurring without human intervention?(**11-91)**	**(11-90, 11-91)** Fire severity is a qualitative indicator of the immediate effects of fire on an ecosystem, whether it affects the forest floor, canopy, or some other part of the system. Like fire intensity, fire severity reflects the amount of heat (BTU's) released by a fire, and therefore it is also dependent on fuels and fire behavior. Fire severity also integrates fuel and soil conditions before a fire, energy released during and after flaming combustion, and visible effects after a fire. 25-75% mortality is mixed severity, and more than 75 % mortality is high severity. Fire severity is not used in reference to the analysis area it is usually discussed in terms of wildfire effects. Expected fire type i.e. crown or surface fire are discussed as an indicator of potential fire behavior (FEIS, Chapter 3 Fire and Fuels). Mixed and high severity fire types have contributed to existing conditions on the landscape, for example, variety in age class of

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22. What beneficial ecological roles do beetles play? **(11-92)** 23. Can the forest survive without beetles?(**11-93)**	trees, individual tree and stand health as well as, quantity of dead and down material. These influences will continue to shape the landscape. The Need for this project describes the existing conditions on the landscape, which is a result of past and ongoing natural processes such as fire, insects, wind and manmade activity as they relate to fuel conditions. The need for and purpose of treatments in the Telegraph project are not designed to alter the landscape but rather to change fire behavior in treated areas to increase firefighter and public safety and to reduce wildland fire risks to private and National Forest System improvements. **(11-92, 11-93)** "Bark beetles act as "agents of change" within the conifer forests of the Rocky Mountain area. In some ecosystems (such as lodgepole pine), beetle outbreaks and subsequent fires are often stand-replacing events critical to maintaining the species over much of its distribution. Bark beetle-caused tree mortality also provides important habitat for some species of wildlife, provides coarse woody debris to streams, and contributes to nutrient recycling." (Samman et al 2000). Benefits ecologically from beetle mortality include: providing dead trees; either standing or down, providing food for those wildlife species that feed on these beetles, improving the probability of wildfire that in turn creates structural diversity (from young to old forest) across a landscape if not a huge portion of the forest burns, increase the amount of down woody material to the forest floor after beetle kill. Can the forest survive without beetles? Sure, the forest can survive, but a forest without beetles would be different in many ways compared to a forest with beetle disturbance. Beetles have a role in the ecosystem and regardless of this decision, beetles will continue to have a role.
24. Why is logging that removes all/almost all trees considered regeneration (and not loss of existing forest), when a stand-replacing fire is considered loss of the forest (and not regeneration)?**(11-94)** 25. How will the project improve watershed health? **(11-95**)	**(11-94)** It is unclear how this comment relates to the Telegraph analysis or alternatives. The use of terms appears to be an expression of philosophical opinion. Stand replacing fire indicates that the fire consumes or kills approximately 80% or more of the above ground dominant vegetation. (FEIS – glossary) This type of fire might result in regeneration of young trees or it might not depending on many factors related to fire behavior and site conditions. (**11-95)** A primary goal of this project is to develop conditions that leave the project area and its watersheds less vulnerable to the effects of wildfire. In addition, watershed improvements such as reduction in sediment delivery to streams are expected as a result of the proposed road decommissioning and stream crossing improvements. See the Hydrology specialist report and Hydrology section of the FEIS for

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26.Will this project will leave enough snags to follow the Regional 1 requirements and the requirements of sensitive old growth species such as flammulated owls and goshawks?(**11-96)** 27.After snags are cut down for safety for OSHA requirements will there still be enough snags left for old growth sensitive species?(**11-97)** 28.Are there any WQLS streams in the project area and if so are the TMDLs completed and are you complying with them?(**11-98)**	a more detailed list of projects proposed, discussion and analysis. **(11-96)** Snag data in the Wildlife Report in the FEIS are derived from the Estimates of snag densities for eastside forests in the Northern Region (Bollenbacher et al. 2008) which replaces the R1 Snag Protocol (Ritter et al. 2000). Post-treatment snag densities would meet Forest Plan standards and snag densities project area-wide would remain elevated over natural levels as described in the Eastside Snag Assessment (see Snags and Woody Debris, Regulatory Framework and Forest Plan Consistency; Northern Goshawk, Conclusions; Pileated Woodpecker, Conclusions; and Sensitive Species, Flammulated Owl. See also the Forested Habitats of Special Concern report in the FEIS. **(11-97)** See Snags and Woody Debris, Regulatory Framework and Forest Plan Consistency; Northern Goshawk, Conclusions; Pileated Woodpecker, Conclusions; and Sensitive Species, Flammulated Owl. **(11-98)** Information on project-area streams listed as water quality limited in the Little Blackfoot River TMDL document was disclosed in the *Existing Conditions* section of the Hydrology specialist report. The proposed activities under all alternatives are predicted to bring the HLCNF closer to meeting the sediment reduction goals encouraged in the TMDL report. See the Hydrology specialist report and Hydrology section in the FEIS for a more detailed discussion and analysis.
25. Have you formally consulted with the FWS on the effects of this project and the forest plan on grizzly bears? **(11-99)**	**(11-99)** Consultation has not yet been initiated with the USFWS.
26.Why aren't you doing more to protect and not harm habitat for westslope cutthroat trout? **(11-100)** THE AGENCIES MUST PREPARE A BIOLOGICAL ASSESSMENT AND BIOLOGICAL OPINION FOR THE FOREST PLAN REGARDING IMPACTS ON THE THREATENED CANADA LYNX & CRITICAL HABITAT**.(11-101)** The Forest Service must consult with FWS regarding the impacts of the Forest Plan on Canada lynx and lynx critical habitat. Multiple confirmed satellite records from Colorado Division of Wildlife undisputedly establish that lynx are present within the Forest. In fact, the USFWS is currently under court order to consider whether to designate this occupied Forest as lynx critical habitat. In light of these circumstances, the agencies are violating the ESA by failing to prepare a Biological Assessment and Biological Opinion for the Revised Forest Plan for lynx and lynx critical habitat.	**(11-100)** Refer to Direct, Indirect and cumulative effects analysis in the Fisheries Report and Fisheries Section in the FEIS for effects to aquatic resources. Specifically, Alternative 2 proposes 6 stream crossing improvements, Alternatives 3 there are 9 proposed stream crossing improvements and approximately 32.8 miles of decommissioning and Alternative 4 proposes 24 stream crossing improvements and 32.8 miles of road decommissioning that would improve overall watershed condition across the project area. **(11-101)** This comment is outside the scope of the Telegraph project. There is no critical habitat in the project area (see Canada Lynx, Affected Environment, Critical Lynx Habitat in the FEIS). (See 11-83).

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The U.S. District Court ruled that the FWS has to reconsider all of the Helena NF as critical habitat for lynx. Therefore, before this project can go forward, the F.S. must consult with the USFWS on the effect of this project on lynx and if the project will adversely modify lynx habitat. By definition the clearcutting in this project will adversely modify lynx habitat. (**11-102)** To say otherwise is arbitrary. Page 508 of the DEIS says: "Lynx are known to occur in the project area— having been systematically tracked both north and south of Highway 12. Numbers are very low and, to date, no evidence of breeding has been noted. The bulk of the foraging habitat used by these animals has been in early seral conifer stands rather than in older multi-storied forest. The action alternatives would result in the removal of key lynx habitat–stand initiation and multistory hare habitat within the wildland urban interface." First of all, please contact John Squires about this project.**(11-103)** He says older multi-storied forest is the best lynx habitat. The ESA still applies in the WUI. Please formally consult with the US FWS on the impacts of this project are required by the ESA. THE AGENCIES MUST PREPARE A BIOLOGICAL ASSESSMENT AND BIOLOGICAL OPINION **(11-104)** FOR THE FOREST PLAN REGARDING IMPACTS ON THE THREATENED BULL TROUT. THE AGENCIES MUST PREPARE A BIOLOGICAL ASSESSMENT AND BIOLOGICAL OPINION **(11-105)** FOR THE FOREST PLAN REGARDING IMPACTS ON THE THREATENED GRIZZLY BEAR.	**(11-102)** The USFWS Final Rule (50 CFR Part 17) designating "critical" habitat for lynx in the contiguous U.S. (Federal Register, Vol. 74, No. 36, Feb. 25, 2009) has been in effect since March 2009. In 2014, USFWS published a revised designation of critical habitat (Federal Register, Vol. 79, No. 177, Sep. 12, 2014). The revised rule did not change any designation on the Helena National Forest. See the Affected Environment section for the Canada Lynx, Critical Lynx Habitat and the project record for the Federal Register references). Since the project area is not in critical habitat, lynx habitat will not be adversely modified. However, the analysis in the FEIS for the Canada lynx has led to the conclusion that the action alternatives 'may affect and are likely to adversely affect' lynx. As such formal consultation will occur with respect to the effects of project activities on lynx. **(11-103)** We agree that multistory forest is important to lynx and cite Squires research to that end in the analysis in the DEIS and FEIS. See the Predator-Prey Relationships and Conclusions section for Canada Lynx. See also Squires (2010) in the project record. **(11-104)** The Telegraph Project BA for bull trout has been prepared in accordance with the following guidance and direction: • Section 7(a)(2) of the Endangered Species Act of 1973 (as amended), • 50 CFR § 402.12 (Interagency Cooperation, Biological Assessments), • Endangered Species Consultation Handbook (USFWS and NMFS, March 1998). **(11-105)** The Forest consulted with the USFWS on the Forest Plan with regard to grizzly bears in 2006 and again in 2013. The biological assessments and biological opinions are in the project record.
The grizzly bear is an ESA-listed threatened species that is present on the Forest. Grizzly bears may be present in the Project area. There have been recent reports of grizzly bears expanding south out of the Northern Continental Divide Ecosystem (NCDE) onto the northern portion of the Forest. Grizzly bear presence in the Project area is likely due to confirmed reports of grizzly bears in the area to the east, south, north and west of the Project area. Page 168-169 of the Flint Foothills FEIS says:	

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"Eight verified observations of grizzly bears or their tracks have occurred south of the project area on the northern and western portions of the BDNF since 2010." A grizzly bear was recently trapped near Avon. The attached article from the Helena August 6th Independent Record says: "Grizzly bear relocated after killing sheep near Avon August 06, 2015 4:45 pm • TOM KUGLIN Independent Record Montana Fish, Wildlife and Parks relocated a female grizzly bear that killed a domestic sheep east of Avon on Sunday, Aug. 2. USDA Wildlife Services captured the bear Monday near the site of the kill, according to an FWP prerelease. The bear killed a single ewe, said FWP bear specialist Jamie Jonkel. Wildlife Services set snares and captured the bear the next day, he said. The 271 pound 3- or 4-year-old female grizzly is the furthest south officials have ever captured a female bear in FWP region 2, said Jonkel. "They've very slowly been filtering down and we're even seeing a few come north from Yellowstone," he said. Male grizzly bears are more likely to travel to new home ranges while females usually take up a portion of their mother's home range, Jonkel said. A few years ago, officials captured a male bear near Deer Lodge and another was killed near Anaconda, he added. The area around the Avon depredation and capture is quality habitat similar to that of Yellowstone National Park, Jonkel said. "It's a drier type of habitat, full of bear foods, and folks can expect to see more bears in that Avon/ Elliston area and even closer to Helena," he said. The grizzly was fitted with a GPS collar and relocated to the South Fork of the Flathead on the edge of the Great Bear Wilderness on Tuesday, the press release said. Relocated bears may stay in the area, but they have been known to head north into Canada, Jonkel said, or to travel back to their capture site."	

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All DNA evidence indicates these grizzly bears came from the NCDE population. These observations have been north of Butte in Elk Park, in the headwaters of the Little Blackfoot River, in the headwaters of Cottonwood Creek, in the Lockhart Meadows area, in the Boulder River watershed, and north and west of Anaconda in the Philipsburg and Rock Creek drainage area (USFWS 2013a). It is unknown if these verified observations represent eight individual grizzly bears." Since the FEIS says there have been verified sightings of grizzly bears in the area, the F.S. must formally consult with the US FWS on impact of the project on grizzly bears. **(11-106)** The effects to grizzly bears from the Project include potential disturbance or displacement due to human presence, motorized use and other mechanized equipment, presence of livestock (an unnatural food source), and changes in forested condition classes (depending on type of timber harvest). The presence of these activities and the presence of roads may lead grizzly bears to avoid an otherwise suitable habitat. Temporary roads would be built in the logging units. These temporary roads would be similar in disturbance effects as the logging operation. Page 246 of the DEIS says grizzly bears are considered present in the project area according to the January 8, 2015 U.S. Fish and Wildlife Service Species List. The Project EIS and Biological Assessment (BA)/ Biological Opinion (BiOp) should have a discussion of the natural history information and status of the NCDE population is appropriate in the EIS. **(107)** Nonetheless, the Project EIS and BA/BiOp must disclose and apply the best available science on recommended open motorized route density, total motorized route density, and core habitat thresholds for NCDE grizzly bears. **(108)** The best available science on NCDE grizzly bears requires no more than 19% open motorized route density over 1.0 mi./sq.mi. and 19% total motorized route density over 2.0 mi./sq.mi., and no less than 68% core habitat for NCDE grizzly bears (19/19/68). <u>Weeds</u> Page 523 of the DEIS states: "Noxious weeds can dominate plant communities and tend to form monocultures which negatively impact biological diversity. This weed competition to individual plants and communities can result in a loss of species diversity and effects to sensitive plants and their habitats.	**(11-106)** Consultation has not yet been initiated with the USFWS. Consultation will unfold according to the determination reached for project impacts to grizzly bears. **(11-107)** The biological assessment will be prepared in accordance with 50 CFR 402.12, Interagency Coordination, Biological Assessments and in coordination with the USFWS (see project record for 50 CFR 402 and the ESA Section 7 Handbook). The DEIS and FEIS includes a discussion of the population status of grizzly bears in the NCDE (see Population Status in the NCDE). **(11-108)** The grizzly bear analysis in the DEIS and FEIS utilizes NCDE concepts of open road densities, total road densities, and core areas to describe grizzly bear habitat in the project area (see particularly the Core Areas and Road Densities section). The FEIS includes an analysis of project activities on these parameters. See the Environmental Consequences section for grizzly bears. **(11-109)** For all action alternatives, the level of risk associated with noxious weed spread is low, determined through a noxious weed risk evaluation. The low level of risk is mainly due to the relatively low

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Even with continued weed control treatments, existing weed infestations would likely expand, especially in undocumented, inaccessible sites." So the DEIS admits that weeds will continue to expand and this project will likely make it worse. This is a violation of NFMA, NEPA, the ESA and the APA.**(109)**	susceptibility of the affected habitat types. Under all three action alternatives, implementing project design features for weed control and emphasizing weed management after soil-disturbing activities would result in reducing the risk of introduction and spread of undesirable plants within the project area. So, yes, the proposal does carry a risk of weed spread, but design features should minimize this risk.
Native plants are the foundation upon which the ecosystems of the Forest are built, providing forage and shelter for all native wildlife, bird and insect species, supporting the natural processes of the landscape, and providing the context within which the public find recreational and spiritual opportunities. All these uses or values of land are hindered or lost by conversion of native vegetation to invasive and noxious plants. The ecological threats posed by noxious weed infestations are so great that a former chief of the Forest Service called the invasion of noxious weeds "devastating" and a "biological disaster." Despite implementation of Forest Service "best management practices" (BMPs), noxious weed infestation on the Forest is getting worse and noxious weeds will likely overtake native plant populations if introduced into areas that are not yet infested. The Forest Service has recognized that the effects of noxious weed invasions may be irreversible. Even if weeds are eliminated with herbicide treatment, they may be replaced by other weeds, not by native plant species. Invasive plant species, also called noxious weeds, are one of the greatest modern threats to biodiversity on earth. Noxious weeds cause harm because they displace native plants, resulting in a loss of diversity and a change in the structure of a plant community. By removing native vegetative cover, invasive plants like knapweed may increase sediment yield and surface runoff in an ecosystem. As well knapweed may alter organic matter distribution and nutrient through a greater ability to uptake phosphorus over some native species in grasslands. Weed colonization can alter fire behavior by increasing flammability: for example, cheatgrass, a widespread noxious weed on the Forest, cures early and leads to more frequent burning. Weed colonization can also deplete soil nutrients and change the physical structure of soils. The Forest Service's own management activities are largely responsible for noxious weed infestations; in particular, logging, prescribed burns, and road construction and use create a risk of weed infestations. The introduction of logging equipment into the Forest creates and exacerbates noxious weed infestations. The removal of trees through logging can also facilitate the establishment of noxious weed infestations because of soil disturbance and the reduction of canopy closure In general, noxious weeds occur in old clearcuts and forest openings, but are rare in mature and old growth forests. Roads are often the first place new invader weeds are	

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introduced. Vehicle traffic and soil disturbances from road construction and maintenance create ideal establishment conditions for weeds. Roads also provide obvious dispersal corridors. Roadsides throughout the project area are infested with noxious weeds. Once established along roadsides, invasive plants will likely spread into adjacent grasslands and forest openings. Prescribed burning activities within the analysis area would likely cumulatively contribute to increases to noxious weed distribution and populations. As a disturbance process, fire has the potential to greatly exacerbate infestations of certain noxious weed species, depending on burn severity and habitat type (Fire Effects Information System 2004). Soil disturbance, such as that resulting from low and moderate burn severities from prescribed fire and fire suppression related disturbances (dozer lines, drop spots, etc.), provide optimum conditions for noxious weed invasion. Dry site vegetation types and road corridors are extremely vulnerable, especially where recent ground disturbance (timber management, road construction) has occurred. Units proposed for burning within project area may have closed forest service access roads (jammers) located within units.	
These units have the highest potential for noxious weed infestation and exacerbation through fire activities. Please provide an alternative that eliminates units that have noxious weeds present on roads within units from fire management proposals. **(11-110)** Please address the ecological, social and ascetic impact of current noxious weed infestations within the project area. Include an analysis of the impact of the actions proposed by this project on the long and short term spread of current and new noxious weed infestations. **(11-111)** What treatment methods will be used to address growing noxious weed problems?**(11-112)** What noxious weeds arecurrently and historically found within the project area?(**11-113)** Please include a map of current noxious weed infestations which includes knapweed, Saint Johnswort, cheat grass, bull thistle, Canada thistle, hawkweed, hound's-tongue,oxeye daisy and all other Category 1, Category 2 and Category 3 weeds classified as noxious in the MONTANA COUNTY NOXIOUS WEED LIST. **(11-114)** Statelisted Category 2 noxious weed species yellow and orange hawkweeds are recently established (within the last 5 to 10 years) in Montana and are rapidly expanding in established areas. They can invade undisturbed areas where native plant communities are intact. These species can persist in shaded conditions and often grow underneath shrubs making eradication very difficult. Their stoloniferous (growing at the surface or below ground) habit can create dense mats that can persist and spread to densities of 3500 plants per square mile (Thomas and Dale 1975). Are yellow and orange hawkweeds present within the project area?	**(11-110)** An additional alternative was consider in the DEIS on pg. 48. It was interpreted by the IDT that this meant eliminating any unit that has roads and noxious weeds from any proposed fuels treatment. Because some level of noxious weeds are present along almost every road this would eliminate most fire treatments from any action alternative. This does not meet the purpose of this project. An additional design feature was added which includes noxious weed pre-treatment of all roads associated with implementation of an action alternative. **(11-111)** This analysis has been updated and completed for the FEIS and is included in the Noxious Weed section of the FEIS and the Noxious Weed Specialist Report. **(11-112)** Biological, mechanical, and chemical control methods are currently being used in the area and it is proposed similar control methods are used for this project area. **(11-113)** The current and historical noxious weeds in the project area are disclosed in the Noxious Weed section of the FEIS and the Noxious Weed Specialist Report. **(11-114)** Species and acres of current known weed infestations including a map is in the Noxious Weed Section of the FEIS and Noxious Weed Specialist Report.

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Please address the cumulative, direct and indirect effects of the proposed project on weed introduction, spread and persistence that includes how weed infestations have been and will be influenced by the following management **(11-115)** actions: road construction including new permanent and temporary roads, and skid trails proposed within this project; opening and decommissioning of roads represented on forest service maps; ground disturbance and traffic on forest service template roads, mining access routes, and private roads; removal of trees through commercial and pre-commercial logging and understory thinning; and prescribed burns. **(11-116)** What open, gated, and decommissioned Forest Service roads within the project area proposed as haul routes have existent noxious weed populations and what methods will be used to assure that noxious weeds are not spread into the proposed action units? **(11-117)**	(**11-115**) The effects of the proposed project on noxious weeds are disclosed in the Noxious Weed Specialist Report. According to recent noxious weed inventory, orange hawkweed and meadow hawkweed are present in the project area. **(11-116)** The effects of the proposed project on noxious weeds are disclosed in the Noxious Weed Section of the FEIS and Noxious Weed Specialist Report. **(11-117)** Maps included in the Noxious Weed section of the FEIS and the Noxious Weed Specialist Report display the locations of known noxious weeds in relation to roads and treatment units. Additional design features to address existing noxious weed populations along roads include: noxious weed pre-treatment of all roads associated with implementation of any action alternative and log trucks, loading equipment, and personal vehicles would be required to remain on the roads or landing areas. This should help minimize the movement of weeds away from roads.
Noxious weeds are not eradicated with single herbicide treatments. A onetime application may kill an individual plant but dormant seeds in the ground can still sprout after herbicide treatment. Thus, herbicides must be used on consistent, repetitive schedules to be effective. What commitment to a long-term, consistent strategy of application is being proposed for each weed infested area within the proposed action area? What long term monitoring of weed populations is proposed? (**11-118)** When areas treated with herbicides are reseeded on national forest land, they are usually reseeded with exotic grasses, not native plant species. What native plant restoration activities will be implemented in areas disturbed by the actions proposed in this project? Will disturbed areas including road corridors, skid trails, and burn units be planted or reseeded with native plant species? **(11-119)** The scientific and managerial consensus is that prevention is the most effective way to manage noxious weeds. The Forest Service concedes that preventing the introduction of weeds into uninfested areas is “the most critical component of a weed management program.” The Forest Service’s national management strategy for noxious weeds also recommends “develop[ing] and implement[ing] forest plan standards . . . .” and recognizes that the cheapest and most effective solution is prevention. Which units within the project area currently have no noxious weed populations within their boundaries? What minimum standards are in the Helena National Forest Plan to address noxious weed infestations? Please include an alternative in the DEIS that includes land management standards that will prevent new weed infestations by addressing the causes of weed	**(11-118)** Treatment strategies for known noxious weed populations within treatment units, along road ways and within ½ mile buffer of treatment units are described in the Noxious weed section of the FEIS and the Noxious weed specialist report. Two monitoring items are identified in the Noxious Weeds Specialist Report: 1. Monitor areas around disturbance areas associated with timber, fuels, and road decommissioning activities within the project area once annually during the growing season for at least 3 years after project completion for new invasive plant introductions. 2. Monitor treated invasive plant populations once annually for at least 3 years to determine efficacy of treatment. **(11-119)** Several design features are include in Chapter 2 and within resource specialist reports related to using native seed to re-vegetate disturbance areas as a result of project implementation. These are included in Visuals Specialist Report, Watershed Specialist Report, Noxious Weed Specialist Report, Soils Specialist Report and Wildlife Specialist Report. The recommended native seed mix is displayed in an appendix to the Noxious Weed Report. National policy directs the FS to use native species when available and chances are good that the native seeding/planting will be successful.

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infestation. The failure to include preventive standards violates NFMA because the Forest Service is not ensuring the protection of soils and native plant communities. Additionally, the omission of an EIS alternative that includes preventive measures would violate NEPA because the Forest Service would fail to consider a reasonable alternative. **(11-120)** <u>Rare Plants</u> The ESA requires that the Forest Service conserve endangered and threatened species of plants as well as animals. In addition to plants protected under the ESA, the Forest Service identifies species for which population viability is a concern as "sensitive species" designated by the Regional Forester (FSM 2670.44). The response of each of the sensitive plant species to management activity varies by species, and in some cases, is not fully known. Local native vegetation has evolved with and is adapted to the climate, soils, and natural processes such as fire, insect and disease infestations, and windthrow. Any management or lack of management that causes these natural processes to be altered may have impacts on native vegetation, including threatened and sensitive plants. Herbicide application – intended to eradicate invasive plants – also results in a loss of native plant diversity because herbicides kill native plants as well as invasive plants. Although native species have evolved and adapted to natural disturbance such as fire on the landscape, fires primarily occur in mid to late summer season, when annual plants have flowered and set seed. Following fall fires, perennial root-stocks remain underground and plants emerge in the spring. Spring and early summer burns could negatively impact emerging vegetation and destroy annual plant seed.	**(11-120)** Units without known noxious weeds are represented in the noxious weed supporting data which is located in the project record. For all action alternatives, the level of risk associated with noxious weed spread is low, determined through a noxious weed risk evaluation. The low level of risk is mainly due to the relatively low susceptibility of the affected habitat types. Under all three action alternatives, implementing project design features for weed control and emphasizing weed management after soil disturbing activities would result in reducing the risk of introduction and spread of undesirable plants within the project area. So, yes, the proposal does carry a risk of weed spread, but design features should minimize this risk. These design features included in all action alternatives are included in Chapter 2 of the FEIS and the effects analysis that determines consistency with the Helena National Forest Plan is in the Noxious Weed Section of the FEIS.
What threatened, endangered, rare and sensitive plant species and habitat are located within the proposed project area? **(11-121)** What standards will be used to protect threatened, rare, sensitive and culturally important plant species and their habitats from the management actions proposed in this project? **(11-122)** Describe the potential direct and indirect effect of the proposed management actions on rare plants and their habitat.**(11-123)** Will prescribed burning occur in the spring and early summer; please give justifications for this decision using current scientific studies as reference. **(11-124)** <u>Whitebark Pine</u> Page 524 of the DEIS says: "Due to the relatively minor whitebark pine presence, and lack of the habitat types and topography where whitebark pine could be expected to dominate, none of the alternatives would considerably alter the abundance or health of whitebark pine at the landscape or Forest scales, or measurably impact the viability of whitebark pine across its range. At these broad scales, the overall decline of whitebark pine due to the factors identified by the USFWS (2011) would generally continue."	**(11-121, 11-122, 11-123)** Hall's rush and whitebark pine, two Region 1 Sensitive plants, exist in the project area within treatment units. Design features are in place for their protection and enhancement. Other sensitive plant species are present in the larger combined boundary, but no others are known within the project area. • Specific project design features include: Hall's rush (*Juncus hallii*) occurs in or near units 060, 063, 066, and 122, in wet meadow habitats. These wetland habitats would already receive adequate site protection through standard riparian design features. • If additional sensitive plant populations are located within the project area appropriate mitigation (e.g., site avoidance, avoid concentration of fuels on sites to be burned) would be followed upon consultation with a Forest Service botanist. • A 100-foot buffer around any sensitive plant species would be required when herbicides are applied. Within this buffer only hand-pulling of

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The Purpose and Need assumes this project will benefit Whitebark pine by clear cutting and commercially thinning the project area. Whitebark pine seedlings, saplings and mature trees, present in subalpine forests proposed for logging and burning, would experience mortality from project activity. Whitebark pine is fire intolerant (thin bark). Fire favors whitebark pine regeneration (through canopy opening and reducing competing vegetation) only in the presence of adequate seed source and dispersal mechanisms (Clarks Nutcracker or humans planting whitebark pine seedlings). White pine blister rust, an introduced disease, has caused rapid mortality of whitebark pine over the last 30 to 60 years. Please find attached, Keane and Arno (1993) reported that 42 percent of whitebark pine in western Montana had died in the previous 20 years with 89 percent of remaining trees being infected with blister rust. (Lit review). The ability of whitebark pine to reproduce naturally is strongly affected by blister rust infection; the rust kills branches in the upper cone bearing crown, effectively ending seed production. Montana is currently experiencing a mountain pine beetle epidemic. Mountain pine beetle prefer large, older whitebark pine, which are the major cone producers. In some areas the few remaining whitebark that show the potential for blister rust resistance are being attacked and killed by mountain pine beetles, thus accelerating the loss of key mature cone-bearing trees. Whitebark pine seedlings and saplings are very likely present in the subalpine forests proposed for burning and logging. In the absence of fire, this naturally occurring whitebark pine regeneration would continue to function as an important part of the subalpine ecosystem. Since 2005, rust resistant seed sources have been identified in the Northern Rockies (Mahalovich et al 2006). Due to the severity of blister rust infection within the region, natural whitebark pine regeneration in the project area is prospective rust resistant stock.	weeds would be allowed, (Environmental Protection Measure #22 from the Helena National Forest Noxious Weed FEIS and Record of Decision 2006). This is disclosed in Chapter 2 of the FEIS, the Botany Section of the FEIS and the Biological Evaluation and Botany Specialist Report. **(11-124)** The timing of prescribed burning and its justification is described in FEIS Chapter 2 – Terminology. Prescribed burning was not restricted except to minimize risk of escaped burn. There was no concern associated with sensitive plants since there was no potential habitat. Lit Review -The presence of white pine blister rust is discussed in the Habitats of Special Concern specialist report, and included in Chapter 2 of the FEIS are design features to protect the remaining whitebark pine cone bearing trees as well as seedlings and saplings. In Alternative 4, approximately 158 acres is being proposed for Whitebark pine release. Specifically, this will include felling in young previously harvested stands that have regenerated through planting and/or natural regeneration, primarily to lodgepole pine. Occasional naturally seeded whitebark pines occur across these units, so in order to maintain whitebark pines and promote their growth and seed production, this treatment proposes to “daylight” by only clearing around individual or groups of whitebark pine while leaving the majority of the stand at current densities. Prior to treatment the units will be surveyed with all whitebark pines mapped, and Wildlife Biologists consulted as to the amount and distribution of release activities.
Although prescribed burning can be useful to reduce areas of high-density subalpine fir and spruce and can create favorable ecological conditions for whitebark pine regeneration and growth, in the absence of sufficient seed source for natural regeneration maintaining the viability and function of whitebark pine would not be achieved through burning. Planting of rust-resistant seedlings would likely not be sufficient to replace whitebark pine lost to fire activities. We asked in our scoping comments What surveys have been conducted to determine presence and abundance of whitebark pine re-generation **(11-125)** but it is not clear that any were done. If whitebark pine seedlings and saplings are present, what measures will be taken to protect them? **(11-126)** Please include an alternative that excludes burning in the presence of whitebark pine regeneration (consider ‘Daylighting’ seedlings and saplings as an alternative restoration method). **(11-127)** Will restoration efforts include planting whitebark pine? Will planted	**(11-125) & (11-126)** Presence and abundance of whitebark pine has been noted in stand diagnoses and will continue to be documented during unit layout. Concentrations of whitebark pine seedlings and saplings will be noted and avoided during operations. Forested Habitats of Special Concern Specialist Report, Design Features – Chapter 2, FEIS and Forested Habitats of Special Concern Specialist section in the FEIS. **(11-127)** Please see 11-124, 11-125, 11-126 **(11-128)** As stated in the design features, to the extent that funding and rust resistant stock is available, whitebark would be planted in treatment units where it has been identified as a potential component. For several decades the Helena-Lewis and Clark NF has had an active genetic tree improvement program which in part focuses on whitebark pine. With this

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seedling be of rust resistant stock? Is rust resistant stock available? Would enough seedlings be planted to replace whitebark pine lost to fire activities? (11-128) Have white pine blister rust surveys been accomplished? What is the severity of white pine blister rust in proposed action areas? **(11-129)** Since the project's goals are to reduce the chances that fire will destroy private structures, and harm people, the current fuel/fire hazard situation on land of all ownerships within the WUI (at least the WUI that's relevant to this area) must be displayed on a map. More importantly, the fuel/fire hazard situation post-project on land of all ownerships within the WUI must also be displayed on a map. **(11-130)** Based on this mapping of current and projected conditions, please accurately disclose the threats to private structures and people under those scenarios,**(11-131)** for all alternatives. It must be discernable why some areas are included for treatment and others are not. The FS must have a detailed long-term program for maintaining the allegedly safer conditions, including how areas will be treated in the future following proposed treatments, or how areas not needing treatment now will be treated as the need arises. The public at large and private landowners mu st know what the scale of the long-term efforts must be, including the amount of funding necessary, and the likelihood based on realistic funding scenarios for such a program to be adequately and timely funded. The FS must assess the fuel and fire risk situation across land ownership boundaries to understand, and disclose to the public, the likely fire scenarios across the area's landscape. **(11-132)** Only then can the context of your proposal be adequately weighed on its merits and evaluated on its merits.	funding, we complete rust surveys and test seedlings from individual trees for rust resistance. Rust-resistant stock is being cultured in a seed orchard on the Helena-Lewis and Clark NF; operational production is 5 to 7 years away. Current operational stock is grown from seed collected in stands where selected trees have been proven to be rust-resistant, so has a higher level of rust resistance than the general population. **(11-129)** Estimated severity of white pine blister rust in Whitebark pine in the project area is described Vegetation, Existing Condition in Chapter 2 of the FEIS and Forested Vegetation Specialist Report. (**11-130)** (Maps) The fire behavior fuel models are map for existing condition. For all action alternatives we have included a qualitative discussion on fuel model types post treatment. These results are based on professional experience in the field regarding fire behavior in these fuel models. A map showing the existing fire behavior fuel models on National Forest System lands is included within the fire and fuels report and in the Fire and Fuels Section of the FEIS. The WUI map is also included. **(11-131)** Fuels- Analyzing threats to private structures is outside the scope of this project. Please see goals and objectives. **(11-132)** The purpose of treatments in all action alternatives are designed to modify fire behavior that would complement and assist our pre-determined wildfire response and suppression tactics and strategizes.
The FS (Cohen, 1999) reviewed current scientific evidence and policy directives on the issue of fire in the wildland/urban interface and recommended an alternative focus on structure ignitability rather than extensive wildland fuel management: The congruence of research findings from different analytical methods suggests that home ignitability is the principal cause of home losses during wildland fires… Home ignitability also dictates that effective mitigating actions focus on the home and its immediate surroundings rather than on extensive wildland fuel management. [Research shows] that effective fuel modification for reducing potential WUI fire losses need only occur within a few tens of meters from a home, not hundreds of meters or more from a home. This research indicates that home losses can be effectively reduced by focusing mitigation efforts on the structure and its immediate surroundings. Those characteristics of a structure's materials and design and the surrounding flammables that determine the potential for a home to ignite during wildland fires (or any fires outside the home) will, hereafter, be referred to as home ignitability.	

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The evidence suggests that wildland fuel reduction for reducing home losses may be inefficient and ineffective. Inefficient because wildland fuel reduction for several hundred meters or more around homes is greater than necessary for reducing ignitions from flames. Ineffective because it does not sufficiently reduce firebrand ignitions (Cohen, 1999) That research also recognizes “the imperative to separate the problem of the wildland fire threat to homes from the problem of ecosystem sustainability due to changes in wildland fuels” (Ibid). Please consider that thinning can result in faster fire spread than in the unthinned stand. Graham, et al., 1999a point out that fire modeling indicates: For example, the 20-foot wind speed1 must exceed 50 miles per hour for midflame wind speeds to reach 5 miles per hour within a dense Stand (0.1 adjustment factor). In contrast, in an open stand (0.3 adjustment factor), the same midflame wind speeds would occur at only a 16-mile-per-hour wind at 20 feet. Graham, et al., 1999a also state: Depending on the type, intensity, and extent of thinning, or other treatment applied, fire behavior can be improved (less severe and intense) or exacerbated.” … Fire intensity in thinned stands is greatly reduced if thinning is accompanied by reducing the surface fuels created by the cuttings. Fire has been successfully used to treat fuels and decrease the 1 Velocity of the wind 20 feet above the vegetation, in this case tree tops. Effects of wildfires especially in climax ponderosa pine forests (Deeming 1990; Wagel and Eakle 1979; Weaver 1955, 1957). In contrast, extensive amounts of untreated logging slash contributed to the devastating fires during the late 1800s and early 1900s in the inland and Pacific Northwest forests.	
In their conclusion, Graham, et al., 1999a state: Depending on intensity, thinning from below and possibly free thinning can most effectively alter fire behavior by reducing crown bulk density, increasing crown base height, and changing species composition to lighter crowned and fire-adapted species. Such intermediate treatments can reduce the severity and intensity of wildfires for a given set of physical and weather variables. But crown and selection thinnings would not reduce crown fire potential. Since the scientific literature suggests that your thinning activities will actually increase the rate of fire spread, you need to reconcile such findings **(11-133)** with the contradictory assumptions expressed in your scoping letter. Also, Hessburg and Lemkuhl (1999) suggest that prescribed burning alone can be utilized in many cases—possibly here—where managers typically assume mechanical fuel reductions must be used.	**(11-133)** Correct. Analysis completed for the fire and fuels report describes that the rate of spread and flame length would increase from existing condition due to the recruitment of twigs, branch wood, needles and increase in herbaceous fuels in the short term, approximately 2 years. Loss of twigs and smaller branch wood greatly reduces influence of slash on rate of spread and flame length three to five years after treatments are implemented.

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The FS must disclose its transparent, well thought-out long-term strategy for old-growth associated wildlife species viability in a properly-defined cumulative effects analysis area.**(11-134)** Even though ecological restoration is not the project's priority, the NEPA document must at least identify all the existing ecological liabilities caused by past management actions. This includes poorly located or poorly maintained roads, high-risk fuel situations caused by earlier vegetation manipulation projects, wildlife security problems by open motorized roads and trails plus those that are closed but violated—and include all those impacts in the analyses. **(11-135)** Any desire to keep a road in the project area WUI must be in harmony with the alleged priority goals (again, to reduce the chances that fire will destroy private structures and harm people), not driven by timber production goals. The analysis must show how all roads will in fact be in harmony with the priority goals. **(11-136)** Proposed activities could artificialize the forest ecosystem. Lodgepole pine is particularly subject to blowdown, once thinned. And any forest condition that is maintained through mechanical manipulation is not maintaining ecosystem function. The proposed management activities would not be integrated well with the processes that naturally shaped the ecosystem and resulted in a range of natural structural conditions. Thus, the need for standards guiding both the delineation of zones where artificializing fuel reduction actions may take place, and that also set snag and down woody debris retention amounts.	**(11-134)** The wildlife analysis in the DEIS and FEIS describes the cumulative effects boundary for old growth associated species – assuming this comment refers to the MIS old growth associated species, goshawks and pileated woodpeckers. See the Cumulative Effects section for both species. The Viability Appendix provides the analysis for project effects on species viability. The Forest is currently revising the Forest Plan which will provide a long term strategy for old growth which in turn will govern habitat management for species associated with old growth (see Reasonably Foreseeable Activities for both species). **(11-135)** See the cumulative effects analyses for habitats and species in the wildlife analysis in the FEIS and the wildlife cumulative effects appendix. In addition to wildlife, each specialist report contains a description of the cumulative effects of these activities on the various resources and effects are summarized in the FEIS. A detailed cumulative effects table of activities considered both temporal and spatial scales is detailed in Appendix C of the FEIS and resource specific tables are located in the project record. **(11-136)** Beyond the scope of this project, however, this is being addressed in Forest Plan Revision.
Veblen (2003) questions the premises the FS often puts forth to justify "uncharacteristic vegetation patterns" discussions, that being to take management activities to alter vegetation patterns in response to fire suppression: The premise behind many projects aimed at wildfire hazard reduction and ecological restoration in forests of the western United States is the idea that unnatural fuel buildup has resulted from suppression of formerly frequent fires. This premise and its implications need to be critically evaluated by conducting area specific research in the forest ecosystems targeted for fuels or ecological restoration projects. Fire regime researchers need to acknowledge the limitations of fire history methodology and avoid over-reliance on summary fire statistics such as mean fire interval and rotation period. While fire regime research is vitally important for informing decisions in the areas of wildfire hazard mitigation and ecological restoration, there is much need for improving the way researchers communicate their results to managers and the way managers use this information. Since disruption of fire cycles is identified, the HNF needs to take a hard look at its fire policies. The development of approved fire management plans in compliance with the Federal Wildland Fire Policy was the number one policy objective intended for immediate implementation in the Implementation Action Plan Report for the Federal	**(11-137)** *The Implementation Action Plan Report for the Federal Wildland Fire Management Policy and*

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Wildland Fire Management Policy and Program Review. **(11-137)** In general, the FS lags far behind other federal land management agencies that have already invested considerable amounts of time, money, and resources to implement the Fire Policy. Continued mismanagement of national forest lands and FS refusal to fully implement the Fire Policy puts wildland firefighters at risk if and when they are dispatched to wildfires. This is a programmatic issue, one that the current Forest Plan does not adequately consider. Please see Ament (1997) as comments on this proposal, in terms of fire policy and Forest Planning. Many adverse consequences to soil, ecological processes, wildlife, and other elements of the natural environment are associated with thinning. (Ercelawn, 1999; Ercelawn, 2000.) For example: "Salvage or thinning operations that remove dead or decayed trees or coarse woody debris on the ground will reduce the availability of forest structures used by fishers and lynx." (Bull et al., 2001.) For every project proposal, it is important that the results of past monitoring be incorporated into planning. All Interdisciplinary Team Members should be familiar with the results of all past monitoring pertinent to the project area, and any deficiencies of monitoring that have been previously committed to. For that reason, we expect that the following be included in the NEPA documents or project files: • A list of all past projects (completed or ongoing) implemented in the proposed project area watersheds. (11-138) • The results of all monitoring done in the project area as committed to in the NEPA documents of those past projects. **(11-139)**	*Program Review* (2009) has been revised and now is referred to as the *National Cohesive Wildland Fire Management Strategy* (2014). This strategy focuses on the following key areas: • Restore and Maintain Landscapes— Landscapes across all jurisdictions are resilient to disturbances in accordance with management objectives. • Fire-adapted Communities— Human populations and infrastructure can survive a wildland fire. Communities can assess the level of wildfire risk to their communities and share responsibility for mitigating both the threat and the consequences. • Response to Fire—all jurisdictions participate in making and implementing response decisions. This project is designed to meet these implementation objectives. This is detailed in the Regulatory Framework Section and the Fire and Fuels Specialist Report and Chapter 1 of the FEIS. **(11-138)** Each Specialist report contains a description of the cumulative effects of these activities on the various resources and effects are summarized in the FEIS. A detailed cumulative effects table of activities considered both temporal and spatial is detailed in Appendix C of the FEIS and resource specific tables are located in the project record. **(11-139)** A review of the monitoring plans directly associated with past projects in the Telegraph project area indicates that the Forest-wide Hazardous Tree Removal and Fuels Reduction Project is the only past project with a defined monitoring plan. However, Forest Plan monitoring requirements remain in place for all projects (where applicable) whether or not they are clearly articulated in the respective NEPA document. The results of past Forest Plan monitoring efforts are described in the Monitoring section, where applicable, in the wildlife analysis in the FEIS.
• The results of all monitoring done in the proposed project area as a part of the Forest Plan monitoring and evaluation effort. **(11-140)** • A description of any monitoring, specified in those past project NEPA documents or the Forest Plan for proposed project area, which has yet to be gathered and/or reported. **(11-141)** Please disclose the names of all other past projects (implemented during the life of the Forest Plan) whose analysis area(s) encompass the areas to be "treated" under this proposal. Please disclose if the FS has performed all of the monitoring and mitigation required or	**(11-140)** Forest Plan wildlife monitoring elements applicable to the Telegraph project are C4 (elk/mule deer habitat effectiveness), C7 (old growth habitat), and C8 (mature conifer habitat) (see Helena National Forest Plan, USDA 1986, pp. IV/8). Monitoring results are described in the FEIS in the Monitoring sections for Rocky Mountain Elk, Mule Deer, Northern Goshawks, Pileated Woodpeckers, and American Marten. See 11-19 – Similar comment. **(11-141)** See 11-139

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recommended in any NEPA documents, and the results of the monitoring. For the proposal to be consistent with the Forest Plan, enough habitat for viable populations of old-growth dependent wildlife species is needed over the landscape. Considering potential difficulties of using population viability analysis at the project analysis area level (Ruggiero, et. al., 1994), the cumulative effects of carrying out multiple projects simultaneously across the HNF makes it imperative that population viability be assessed at least at the forestwide scale (**11-142)** (Marcot and Murphy, 1992). Also, temporal considerations of the impacts on wildlife population viability **(11-143)** from implementing something with such long duration as a Forest Plan must be considered (id.) but this has never been done by the HNF. It is also of paramount importance to monitor population during the implementation of the Forest Plan in order to validate assumptions used about long-term species persistence i.e., population viability (Marcot and Murphy, 1992; Lacy and Clark, 1993). Please demonstrate that this project will leave enough snags to follow the Forest Plan requirements and the requirements of sensitive old growth species such as flammulated owls and goshawks. **(11-144)** Loggers are required to follow OSHA safety standards. Will these standards require snags to be cut down? The DEIS does not answer this question. After snags are cut down for safety for OSHA requirements will there still be enough snags left for old growth sensitive species? **(11-145)** Specifically how will the Telegraph vegetation Project affect Flammulated owls, **(11-146)** cavity-nesters usually associated with mature stands of ponderosa pine and Douglas-fir? Among other habitat characteristics, flammulated owls benefit from an abundance of large snags and a relatively dense under-story. The flammulated owl is a sensitive species in Region One, and is largely dependent on old ponderosa pine forests. According to a 2002 Region-wide assessment, not referenced in the 2003 FEIS for the Project, such forests only occur at 12-16% of their former, pre-fire suppression/pre-logging (that is, "historic") levels, and thus species viability has been determined to be at risk. The Northern Region also recognizes that its strategy for restoring habitat for the flammulated owl and found in the Island South project that "in no way guarantees that flammulated owls will be restored to viable levels."	**(11-142)** The Viability Analysis (Wildlife Appendix D in the Appendix D – Wildlife Appendices in the DEIS and FEIS) summarizes available habitat Forestwide for select species relative to critical viability thresholds. **(11-143)** The Viability Analysis is based on habitat estimates derived from the Forest's intensified grid summary database and includes temporal considerations by removing from consideration those data points that have had on-the-ground activities that would remove habitat (e.g., harvest, fire). See the Wildlife Appendix D in the Appendix D – Wildlife Appendices in the DEIS and FEIS. **(11-144)** Post-treatment snag densities would meet Forest Plan standards and snag densities project area-wide would remain elevated over natural levels as described in the Eastside Snag Assessment (see Snags and Woody Debris, Regulatory Framework and Forest Plan Consistency; Northern Goshawk, Conclusions; Pileated Woodpecker, Conclusions; and Sensitive Species, Flammulated Owl). See also the Forested Habitats of Special Concern report in the FEIS. (**11-145)** Loss of snags due to OSHA requirement is accounted for in the snag analysis in the Forested Habitats of Special Concern, by assuming conservatively that all would be lost. See also Snags and Woody Debris, Regulatory Framework and Forest Plan Consistency; Northern Goshawk, Conclusions; and Pileated Woodpecker, Conclusions. **(11-146)** Effects to flammulated owls associated with the project are described in the FEIS. Flammulated owls are not common in the project area due to a lack of suitable habitat (mature, old ponderosa pine and Douglas-fir). There is very little suitable habitat in the Telegraph project area (which is dominated by mid-high elevation lodgepole pine forest). See Sensitive Species, Flammulated Owl section).
Snag densities recommended by experts to support cavity-nesting birds range from 2.1 to 11 snags per acre of greater than 9" dbh. Please note that the fact that more recent science has called into question the lower snag densities cited in the earlier research, and the more recent science implies that about 4 snags per acre may be the minimum required to insure viability. **(11-147**)	**(11-147)** There are currently approximately 50 snags per acre 7 to 11.9 inches in dbh and 9 snags per acre between 12 and 20 inches dbh (according to the summary database) (see the Snag and Woody Debris, Forest Plan Considerations section). Forest Plan standards would be met for all action alternatives (see the Snag and Woody Debris, Regulatory Framework and Forest Plan Consistency section) with an emphasis

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The Project is also designed to reduce under-story density through thinning. What surveys has the HNF specifically designed to detect flammulated owls? **(11-148)** The FS has not developed a conservation strategy for the flammulated owl in the HNF, or in the Northern Rockies. Absent an appropriate landscape management strategy for insuring their viability, based upon the best available science, it is arbitrary and capricious to dismiss potential impacts on the ground where the FS has failed to conduct the kind of comprehensive surveys that would reveal their presence. This convenient excuse for not protecting for a species that is becoming exceedingly rare, a strategy of managing for extinction (since protection premised on detection affords greatest protection to the species that least need it) has been condemned by the FS's own leading expert in the northern region, Mike Hillis: With the exception of the Spotted Owl…, the U.S. Forest Service has not given much emphasis to owl management. This is contrary to the National Forest Management Act of 1976 (NFMA) which mandates that all wildlife species be managed for viable populations. However, with over 500 vertebrate species this would be difficult for any organization. Recognizing the absence of detailed information on owl habitat, the apparent association of owls with snags, mature, and old-growth timber (both rapidly declining), it seems inconsistent that the U.S. Forest Service has placed little emphasis on owl management. One might conclude that the agency's painful experiences with the Spotted Owl in Oregon and Washington have evolved into a 'hear no evil, see no evil' approach for other forest owls as well. Holt and Hillis, "Current Status and Habitat Associations of Forest Owls in Western Montana" (1987). State-of-the-art conservation biology and the principles that underlie the agency's policy of "ecosystem management" dictate an increasing focus on the landscape-scale concept and design of large biological reserves accompanied by buffer zones and habitat connectors as the most effective (and perhaps only) way to preserve wildlife diversity and viability (Noss, 1993). The FS has stated: "Well distributed habitat is the amount and location of required habitat which assure that individuals from demes,2 distributed throughout the population's existing range, can interact. Habitat should be located so that genetic exchange among all demes is possible." (Mealey 1983.) The FS has acknowledged that viability is not merely a project area consideration, that the scale of analysis must be broader**(11-149)**	on retaining large snags (see Design Features in the FEIS). **(11-148)** Flammulated owl surveys have been conducted according to the Northern Region Landbird Monitoring Program Flammulated Owl Protocol (see Assumptions, information used, and methodologies to determine effects to wildlife and project record). **(11-149)** The viability analysis is conducted at the Forest Plan scale (see the Viability Analysis (Wildlife Appendix D in the Appendix D – Wildlife Appendices in the DEIS and FEIS).

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Population viability analysis is not plausible or logical at the project level such as the scale of the Dry Fork Vegetation and Recreation Restoration EA. Distributions of common wildlife species as well as species at risk encompass much larger areas than typical project areas and in most cases larger than National Forest boundaries. No wildlife species that presently occupy the project area are at such low numbers that potential effects to individuals would jeopardize species viability. No actions proposed under the preferred alternative would conceivably lead to loss of population viability. (Lewis and Clark NF, Dry Fork EA Appendix D at p. 9.)	
Fish and other aquatic species prior to the impacts of road building, logging, livestock grazing, etc. Therefore, proper discloser of baseline conditions would mean estimates of stream stability, pool frequency conditions, and water temperature range –essentially the values of Riparian Management Objectives along with such parameters of sediment levels. **(11-150)** When such information is provided, comparison with the aid in the assessment of cumulative effects of all alternatives.	**(11-150)** Habitat parameters and resource indicators were identified for the analysis and the Existing Condition can be found within the Affected Environment section of the Fisheries BE and Specialist Report and the Fisheries Section in the FEIS.
Prescribed fires are mechanical treatments may adversely affect soil productivity. NFMA requires the FS to "not allow significant or permanent impairment of the productivity of land."[36 C.F.R. § 219.27(a)(1).] NFMA requires forest Service to "ensure that timber will be harvested from National Forest System lands only where-soil, slope, or other watershed conditions will not irreversibly damaged." [16 U.S.C. 1604 (g) (3) (E).]	
The sheep Creek Salvage FEIS (USDA Forest Service, 2005a) states at p.173:	
Noxious weed presence may lead to physical and biological changes in soil. Organic matter distribution and nutrient flux may change dramatically with noxious weed invasion. Spotted knapweed (Centaurea biebersteinii D.C.) impacts phosphorus levels at sites (LeJeune and Seastedt, 2001) and can hinder growth of other species with allelopathic mechanism. Specific to spotted knapweed, these traits can ultimately limit native species' ability to compete and can have direct impacts on species diversity (Tyser and Key 1988, Ridenour and Callaway 2001).	
Please disclose how the productivity of the land been affected in the project area and forestwide due to noxious weed infestations, and how that situation is expected to change in the coming years and decades. **(11-151)**	**(11-151)** The current condition of noxious weeds and their effects to resources in the project area are disclosed in the Noxious Weed Specialist Report and Noxious Weed section of the FEIS. Specifically, The Effects Common to All Alternatives in the Noxious Weeds report describes the effects of noxious weeds across the project. In addition the Helena National Forest Weed EIS analyzes effect to site productivity where weeds occur across the Forest. In regards to what can be expected to change in the coming years and decades, no one can predict with 100% certainty where and to what extent weeds will spread to.
Harvey et al., 1994 state:	
The ...descriptions of microbial structures and processes suggest that they are likely to provide highly critical conduits for the input and movement of materials within soil and between the soil and the plant. Nitrogen and carbon have been mentioned and are probably the most important. Although the movement and cycling of many others are mediated by microbes, sulfur phosphorus, and iron compounds are important examples.	

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The relation between forest soil microbes and N is striking. Virtually all N in eastside forest ecosystems is biologically fixed by microbes... Most forests, particularly in the inland West, are likely to be limited at some time during their development by supplies of plant-available N. Thus, to manage forest growth, we must manage the microbes that add most of the N and that make N available for subsequent plant uptake. (Internal citations omitted.) Lacy, 2001 examines the importance of soils for ecosystem functioning and points out the failure of most regulatory mechanisms to adequately address the soils issue. From the Abstract: Soil is a critical component to nearly every ecosystem in the world, sustaining life in a variety of ways—from production of biomass to filtering, buffering and transformation of water and nutrients. While there are dozens of federal environmental laws protecting and addressing a wide range of natural resources and issues of environmental quality, there is a significant gap in the protection of the soil resource. Despite the critical importance of maintaining healthy and sustaining soils, conservation of the soil resource on public lands is generally relegated to a diminished land management priority. Countless activities, including livestock grazing, recreation, road building, logging, and mining, degrade soils on public lands. This article examines the roots of soil law in the United States and the handful of soil-related provisions buried in various public land and natural resource laws, finding that the lack of a public lands soil law leaves the soil resource under protected and exposed to significant harm. To remedy this regulatory gap, this article sketches the framework for a positive public lands soil protection law. This article concludes that because soils are critically important building blocks for nearly every ecosystem on earth, an holistic approach to natural resources protection requires that soils be protected to avoid undermining much of the legal protection afforded to other natural resources. The article goes on: Countless activities, including livestock grazing, recreation, road building, logging, mining, and irrigation degrade soils on public lands. Because there are no laws that directly address and protect soils on the public lands, consideration of soils in land use planning is usually only in the form of vaguely conceived or discretionary guidelines and monitoring requirements. This is a major gap in the effort to provide ecosystem-level protection for natural resources. The rise of an “ecosystem approach” in environmental and natural resources law is one of the most significant aspects of the continuing evolution of this area of law and policy. One writer has observed that there is a fundamental change occurring in the field of environmental protection, from a narrow focus on individual sources of harm to a more holistic focus on entire ecosystems, including the multiple human sources of harm within ecosystems, and	

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the complex social context of laws, political boundaries, and economic institutions in which those sources exist. The FS should firmly establish that the species that exist, or historically are believed to have been present in the analysis area are still part of viable populations.	
Since Forest Plan monitoring efforts have failed in this regard, it must be a priority for project analyses. Identification of viable populations is something that must be done at a specific geographic scale.(**11-152)** The analysis must cover a large enough area to include a cumulative effects analysis area that would include truly viable populations. Analysis must identify viable populations of MIS, TES, at-risk, focal, and demand species of which the individuals in the analysis area are members in order to sustain viable populations**.(11-152)** Unfortunately, region-wide the FS has failed to meet Forest Plan old-growth standards, does not keep accurate old-growth inventories, and has not monitored population trends in response to management activities as required by Forest Plans and NFMA (Juel, 2003). Please disclose how stands to be treated compare to Forest Plan or Regional old-growth criteria. In order to disclose such information, please provide all the details, in plain language, of these areas' forest characteristics (the various tree components' species, age and diameter of the various tree components, canopy closure, snag density by size class, amounts of down logs, understory composition, etc.).**(11-153)** One of the biggest problems with the FS's failure to deal forthrightly with the noxious weed problem on a forest wide basis is that the long-term costs are never m adequately disclosed or analyzed. The public is expected to continuously foot the bill for noxious weed treatments—the need for which increases yearly as the HNF continues the large-scale propagation of weeds, and fails to monitor the effectiveness of all its noxious weed treatment plans to date. There is no guarantee that the money needed for the present management direction will be supplied by Congress, no guarantee that this amount of money will effectively stem the growing tide of noxious weed invasions, no accurate analysis of the costs of the necessary post-treatment monitoring, and certainly no genuine analysis of the long-term costs beyond those incurred by site specific weed control actions.**(11-154)** As federal agencies focus increasingly on addressing environmental protection from an holistic perspective under the current regime of environmental laws, a significant gap remains in the federal statutory scheme: protection of soils as a discrete and important natural resource. Because soils are essential building blocks at the core of nearly every ecosystem on earth, and because soils are critical to the health of so many other natural resources—including, at the broadest level, water, air, and vegetation—they should be protected at a level at least as significant as other natural resources. Federal soil law (such as it is) is	**(11-152)** The wildlife analysis in the DEIS and FEIS provides a discussion and rationale for those species carried forward into the analysis (see Wildlife Appendix A Wildlife Analysis Approach in the Appendix D – Wildlife Appendices in the DEIS and FEIS). The viability analysis also describes the rationale behind those species included in the viability analysis. See Wildlife Appendix D, Viability Analysis, in the Appendix D – Wildlife Appendices in the DEIS and FEIS). **(11-153)** Description of old growth habitat and the effects of proposed treatments are discussed in the Forested Habitats of Special Concern section of the FEIS and the Forested Habitats of Special Concern Specialist Report. **(11-154)** The projected cost of weed treatments has been determined and is included in the Economics report. The appendices and methodology section of the Noxious Weed report describes the methods used to determine predicted acres of noxious weeds pre, during and post treatment which is used to determine treatment cost.

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woefully inadequate as it currently stands. It is a missing link in the effort to protect the natural world at a meaningful and effective ecosystem level. … This analysis concludes that the lack of a public lands soil law leaves the soil resource under-protected and exposed to significant harm, and emasculates the environmental protections afforded to other natural resources.	
(Emphasis added.) The problems Lacy (2001) identifies of regulatory mechanisms exist in Regional and Forest- level standards and other guidance applicable for the proposed project. Please provide estimates of current detrimental disturbance in all previously established activity areas in the watersheds affected by the proposal. **(11-155)** Please disclose the link between current and cumulative soil disturbance in project area watersheds to the current and cumulative impacts on water quantity and quality**. (11-156)** Please disclose if there are any WQLS streams or TMDL streams in the project area. **(11-157)** Please disclose measures of, or provide scientifically sound estimates of, detrimental soil disturbance or soil productivity losses (erosion, compaction, displacement, noxious weed spread) attributable to off-road vehicle use. **(11-158)** Please disclose the results monitoring of weed treatments on the HNF that have been projected to significantly reduce noxious weed populations over time, or prevent spread. **(11-159)** This is an ongoing issue of land productivity. Our goals for the area include fully functioning stream ecosystems that include healthy, resilient populations of native trout. The highest priority management actions in the project area are those that remove impediments to natural recovery. We request the FS design a restoration/ access management plan for project area streams that will achieve recovery goals. **(11-160)** The task of management should be the reversal of artificial legacies to allow restoration of natural, self-sustaining ecosystem processes. If natural disturbance patterns are the best way to maintain or restore desired ecosystem values, then nature should be able to accomplish this task very well without human intervention (Frissell and Bayles, 1996).	**(11-155)** Soils- As directed by FSM 2550.5, evaluation of existing and predicted detrimental soil disturbance has been evaluated by activity area (unit). Please refer to the following sections of the Soil Specialist Report and the FEIS: Soil Report – Regulatory Framework Soil Report – Methodology Soil Report – Soil Disturbance Treatment Scenarios Soil Report – Table 9 See Soil Specialist's Supporting Documents and Soils Resource section in the FEIS. **(11-156)** Please see the Hydrology specialist report for an evaluation of water quality and quantity in project area streams, under existing conditions as well as predicted cumulative effects from the proposed activities. As directed by FSM 2550.5, evaluation of existing and predicted detrimental soil disturbance has been evaluated by activity area (unit). Soil Report – Regulatory Framework Soil Report – Methodology Soil Report – Soil Disturbance Treatment Scenarios Soil Report – Table 9 See Soil Specialist's Supporting Documents This information is also located in the Soils Resource and Hydrology Resource areas of the FEIS. **(11-157)** This comment is similar to comment (11-98). Please see the response to that comment. **(11-158)** Off road vehicle use is an illegal activity occurring within the project area and associated detrimental soil disturbance or soil productivity losses cannot be predicted or quantified. Decommissioning is planned within the project area, most of which will be expediting the recovery of non-system routes. **(11-159)** Noxious Weeds--I don't know if this information is available. **(11-160)** Fish/Hydro- The Little Blackfoot Watershed is a Forest priority watershed. All action alternatives propose some degree of a restoration plan for project area streams that will achieve recovery goals. Specifically, Alternative 2 proposes 6 stream crossing improvements, Alternatives 3 there are 9 proposed stream crossing improvements and approximately 32.8 miles of decommissioning and Alternative 4 proposes 24 stream crossing improvements and 32.8 miles of

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	road decommissioning that would improve overall watershed condition across the project area. Proposed restoration efforts would improve RMO's and watershed condition in the long term.

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Please utilize the NEPA process to clarify any roadless boundary issues. **(11-161)** It is not adequate to merely accept previous, often arbitrary roadless inventories—unroaded areas adjacent to inventoried areas were often left out. Additionally, there is a lot of public support for adding unroaded areas as small as 1,000 acres in size to the roadless inventory. We request a careful analysis of the impacts to fisheries and water quality, including considerations of sedimentation, increases in peak flow, channel stability, risk of rain-on-snow events, and increases in stream water temperature. **(11-162)** Please disclose the locations of seeps, springs, bogs and other sensitive wet areas, and the effects on these areas of the project activities. **(11-163)** Where livestock are permitted to graze, we ask that you assess the present condition and continue to monitor the impacts of grazing activities upon vegetation diversity, soil compaction, stream bank stability and subsequent sedimentation**.(11-164)** Please disclose in the NEPA document the results of up to-date monitoring of fish habitat and watershed conditions and how this project will affect the fish in the project area**. (11-165)** It is extremely important the FS disclose the environmental baseline for watersheds. **(11-166)** Generally, this means their condition before development or resource exploitation was initiated. For example, the baseline condition of a stream means the habitat conditions for fish and other aquatic species prior to the impacts of road building, logging, livestock grazing, etc. Therefore, proper disclosure of baseline conditions would mean estimates of stream stability, pool frequency conditions, and water temperature range—essentially the values of Riparian Management Objectives along with such parameters as sediment levels. When such information is provided, comparison with the current conditions (after impacts of development) will aid in the assessment of cumulative effects of all alternatives. Prescribed fires and mechanical treatments may adversely affect soil productivity. NFMA requires the FS to "not allow significant or permanent impairment of the productivity of the land." [36 C.F.R. § 219.27(a)(1).] NFMA requires the Forest Service to "ensure that timber will be harvested from National Forest System lands only where—soil, slope, or other watershed conditions will not be irreversibly damaged." [16 U.S.C. 1604 (g) (3)(E).]	**(11-161)** IRA- Clarifying any roadless boundary issues via NEPA is out of the scope of this project because it does not relate to the purpose and need described in chapter 1 of the FEIS. However, as described in the Roadless Expanse Resource report for the project, the analysis for Inventoried Roadless Areas include contiguous areas comprised of an unroaded area and an inventoried roadless area. **(11-162)** These analysis items have been considered and updated as appropriate within the Fisheries Specialist Report and the Hydrology Specialist Report completed for the FEIS. Please refer to the Hydrology and Fisheries specialist reports and the FEIS for discussion of these topics. **(11-163)** Forest wetland survey crews searched for wetlands as defined by the United States Army Corps of Engineers (USACE 1987) within the project area. The survey focused on areas identified by a GIS terrain model as likely to have wetlands. Wetlands identified within those areas were described in detail and mapped. These survey data are not comprehensive and do not include all wetlands in the project area, and the identified wetlands were not distinguished by type (fens, wet meadows, etc.). Data from the wetland survey are included in the project record. In addition, protective measures for sensitive wet areas are included in the project design features. These measures encompass all sensitive wet areas including those not yet mapped or identified. Implementation of these measures is anticipated to prevent project-related impacts on wet areas. Please see the Hydrology specialist report and Chapter 2 of the FEIS for additional detail. **(11-164)** As described in the specialist report, livestock grazing is minimal across the project area. Conditions have been evaluated by a range management specialist in the field for annually for multiple consecutive seasons. The monitoring plan in the specialist report includes follow up field visits after implementation. **(11-165**) PACFISH INFISH Biological Opinion (PIBO) Effectiveness Monitoring Project data (2001-2015) were utilized to speak to baseline habitat condition. PIBO Effectiveness Monitoring sites were used to determine the direction and rate of change in riparian and aquatic habitats over time as a

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	function of management practices, and to determine whether riparian and aquatic habitat conditions at managed (integrator) sites are reflective of conditions throughout the watershed and reference reaches. Please refer to the Hydrology Specialist report and Fisheries Biological Evaluation and these resource section of the FEIS for discussion on these topics. **(11-166)** Please see the Existing Conditions section of the Hydrology specialist report and Hydrology Section of the FEIS for information on current watershed conditions in the project area.
The Sheep Creek Salvage FEIS (USDA Forest Service, 2005a) states at p. 173: Noxious weed presence may lead to physical and biological changes in soil. Organic matter distribution and nutrient flux may change dramatically with noxious weed invasion. Spotted knapweed (Centaurea biebersteinii D.C.) impacts phosphorus levels at sites (LeJeune and Seastedt, 2001) and can hinder growth of other species with allelopathic mechanism. Specific to spotted knapweed, these traits can ultimately limit native species' ability to compete and can have direct impacts on species diversity (Tyser and Key 1988, Ridenour and Callaway 2001).	(Climate change literature response) – Responses to the 6 references on climate change submitted by the commenter are located below in the Literature Review section for this comment letter.
Please disclose how the productivity of the land been affected in the project area and forestwide due to noxious weed infestations, and how that situation is expected to change in the coming years and decades. Harvey et al., 1994 state: The ...descriptions of microbial structures and processes suggest that they are likely to provide highly critical conduits for the input and movement of materials within soil and between the soil and the plant. Nitrogen and carbon have been mentioned and are probably the most important. Although the movement and cycling of many others are mediated by microbes, sulfur phosphorus, and iron compounds are important examples. The relation between forest soil microbes and N is striking. Virtually all N in eastside forest ecosystems is biologically fixed by microbes... Most forests, particularly in the inland West, are likely to be limited at some time during their development by supplies of plant-available N. Thus, to manage forest growth, we must manage the microbes that add most of the N and that make N available for subsequent plant uptake. (Internal citations omitted.) Lacy, 2001 examines the importance of soils for ecosystem functioning and points out the failure of most regulatory mechanisms to adequately address the soils issue.	
From the Abstract: Soil is a critical component to nearly every ecosystem in the world, sustaining life in a variety of ways—from production	

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of biomass to filtering, buffering and transformation of water and nutrients. While there are dozens of federal environmental laws protecting and addressing a wide range of natural resources and issues of environmental quality, there is a significant gap in the protection of the soil resource. Despite the critical importance of maintaining healthy and sustaining soils, conservation of the soil resource on public lands is generally relegated to a diminished land management priority. Countless activities, including livestock grazing, recreation, road building, logging, and mining, degrade soils on public lands. This article examines the roots of soil law in the United States and the handful of soil-related provisions buried in various public land and natural resource laws, finding that the lack of a public lands soil law leaves the soil resource under protected and exposed to significant harm. To remedy this regulatory gap, this article sketches the framework for a positive public lands soil protection law. This article concludes that because soils are critically important building blocks for nearly every ecosystem on earth, an holistic approach to natural resources protection requires that soils be protected to avoid undermining much of the legal protection afforded to other natural resources. The article goes on: Countless activities, including livestock grazing, recreation, road building, logging, mining, and irrigation degrade soils on public lands. Because there are no laws that directly address and protect soils on the public lands, consideration of soils in land use planning is usually only in the form of vaguely conceived or discretionary guidelines and monitoring requirements. This is a major gap in the effort to provide ecosystem-level protection for natural resources. The rise of an “ecosystem approach” in environmental and natural resources law is one of the most significant aspects of the continuing evolution of this area of law and policy. One writer has observed that there is a fundamental change occurring in the field of environmental protection, from a narrow focus on individual sources of harm to a more holistic focus on entire ecosystems, including the multiple human sources of harm within ecosystems, and the complex social context of laws, political boundaries, and economic institutions in which those sources exist. As federal agencies focus increasingly on addressing environmental protection from a holistic perspective under the current regime of environmental laws, a significant gap remains in the federal statutory scheme: protection of soils as a discrete and important natural resource. Because soils are essential building blocks at the core of nearly every ecosystem on earth, and because soils are critical to the health of so many other natural resources—including, at the broadest level, water, air, and vegetation—they should be protected at a level at least as significant as other natural resources. Federal soil law (such as it is) is woefully inadequate as it currently stands. It is a missing link in the effort to protect the natural world at a meaningful and effective ecosystem level.	

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… This analysis concludes that the lack of a public lands soil law leaves the soil resource under-protected and exposed to significant harm, and emasculates the environmental protections afforded to other natural resources.	
(Emphasis added.) The problems Lacy (2001) identifies of regulatory mechanisms exist in Regional and Forest level standards and other guidance applicable for the proposed project. Please provide estimates of current detrimental disturbance in all previously established activity areas in the watersheds affected by the proposal. Please disclose the link between current and cumulative soil disturbance in project area watersheds to the current and cumulative impacts on water quantity and quality. Please disclose if there are any WQLS streams or TMDL streams in the project area. Please disclose measures of, or provide scientifically sound estimates of, detrimental soil disturbance or soil productivity losses (erosion, compaction, displacement, noxious weed spread) attributable to off-road vehicle use. Please disclose the results monitoring of weed treatments on the HNF that have been projected to significantly reduce noxious weed populations over time, or prevent spread. This is an ongoing issue of land productivity. Please disclose how the proposed "treatments" would be consistent with Graham, et al., 1994 recommendations for fine and coarse woody debris, a necessary consideration for sustaining long-term soil productivity.**(11-167)** It has been well-established that site-specific Biological Evaluations (BEs) or Biological Assessments (BAs) must be prepared for all actions such as this. Further, the Forest Service Manual requires that BEs/BAs consider cumulative effects. The Forest Service Manual states that project BEs/BAs must contain "a discussion of cumulative effects resulting from the planned project in relationship to existing conditions and other related projects" [FSM 2672.42(4)]. "Existing conditions" obviously are the current conditions of the resources as a result of past actions.	**(11-167)** As needed to comply with Region 1 Soil Quality Standards, coarse woody debris requirements are adhered to as evidenced in the following locations which specifically reference Graham et al 1994: Soil Report – Regulatory Framework Soil Report – Design Features Soil Report – Effects Common to All Action Alternatives In addition please refer to Chapter 2 and the Soils report of the FEIS. Literature Review - This has been addressed below in Literature Review for this comment letter.
Published scientific reports indicate that climate change will be exacerbated by logging due to the loss of carbon storage. Additionally, published scientific reports indicate that climate change will lead to increased wildfire severity (including drier and warmer conditions that may render obsolete the proposed effects of the Project). The former indicates that the Telegraph Vegetation Project may have a significant adverse effect on the environment, and the latter undermines the central underlying purpose of the Project. Therefore, the Forest Service must candidly disclose, consider, and fully discuss the published scientific papers	

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discussing climate change in these two contexts. At least the Forest Service should discuss the following studies: • Depro, Brooks M., Brian C. Murray, Ralph J. Alig, and Alyssa Shanks. 2008. Public land, timber harvests, and climate mitigation: quantifying carbon sequestration potential on U.S. public timberlands. Forest Ecology and Management 255: 1122-1134. • Harmon, Mark E. 2001. Carbon sequestration in forests: addressing the scale question. Journal of Forestry 99:4: 24-29. • Harmon, Mark E, William K. Ferrell, and Jerry F. Franklin. 1990. Effects of carbon storage of conversion of old-growth forest to young forests. Science 247: 4943: 699-702 • Harmon, Mark E, and Barbara Marks. 2002. Effects of silvicultural practices on carbon stores in Douglasfir–western hemlock forests in the Pacific Northwest, USA: results from a simulation model. Canadian Journal of Forest Research 32: 863-877. • Homann, Peter S., Mark Harmon, Suzanne Remillard, and Erica A.H. Smithwick. 2005. What the soil reveals: potential total ecosystem C stores of the Pacific Northwest region, USA. Forest Ecology and Management 220: 270-283. • McKenzie, Donald, Ze'ev Gedalof, David L. Peterson, and Philip Mote. 2004. Climatic change, wildfire, and conservation. Conservation Biology 18:4: 890 -902.	
Please evaluate all of the costs and benefits of this project. Please include a detailed list of all the costs to the agency and the public **(11-168).** It is our intention that you include in the record and review all of the literature and other incorporated documents we've cited herein. Please contact us if you have problems locating copies of any of them. Thank you for your attention to these concerns. Please keep us on your list to receive further mailings on the proposal. Sincerely, And on behalf of: Michael Garrity Sara Johnson Alliance for the Wild Rockies Native Ecosystems Council P.O. Box 505 P.O. Box 125 Helena, Montana 59624 Willow Creek, MT 59760 406-459-5936 and for Steve Kelly, co-director Montana Ecosystems Defense Council, Inc. P.O. Box 4641 Bozeman, MT 59772 406.586.4421 Thank you for the opportunity to comment. Please accept these additional comments on the Telegraph Vegetation	**(11-168)** An analysis of the cost and benefits (in monetary terms) has been completed and is described in the Economics report.

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Project Draft Environmental Impact Statement on behalf of the Alliance for the Wild Rockies Montana Ecosystem Defense Council and Native Ecosystems Council.	
We request a careful analysis of the impacts to fisheries and water quality, including considerations of sedimentation, increases in peak flow, channel stability, risk of rain-on-snow events, and increases in stream water temperature.**(11-169)**	**(11-169)** Please see the response to comment 11-162.
Please disclose the locations of seeps, springs, bogs and other sensitive wet areas, and the effects on these areas of the project activities. **(11-170)** Where livestock are permitted to graze, we ask that you assess the present condition and continue to monitor the impacts of grazing activities upon vegetation diversity, soil compaction, stream bank stability and subsequent sedimentation**. (11-171)**	**(11-170)** This comment is an exact duplicate of comment (11-63). Please the response to that comment.
This watershed has been proposed as bull trout critical habitat. Will you meet the requirements of bull trout critical habitat." **(11-172)**	**(11-171)** This comment is an exact duplicate to comment (11-164). Please see the response to that comment.
Livestock grazing occurs in the Project area and causes sediment impacts, trampled or destabilized banks, increased nutrient loads in streams, and decreased density, diversity, and function of riparian vegetation that may lead to increased stream temperatures and further detrimental impacts to water quality. **(11-173)**	**(11-172)** The final rule for the revised designation of bull trout critical habitat (USFWS 2010) removed all of the Little Blackfoot River drainage as Bull Trout Critical Habitat.
While all of the watersheds in the Project area are suffering from the significant adverse effects of livestock grazing and road construction and road use, not one watershed is impaired due to "conifer encroachment" or tree density.	**(11-173)** The existing condition and field visit documentation does not indicate livestock grazing is causing sediment impacts or bank destabilization. Please provide site specific details as to where this is occurring within the project area. See also response to (11-164).
On July 10, 1998 bull trout (Salvelinus confluentus) were listed as a Threatened Species, within the Columbia River Basin, by the United States Fish and Wildlife Service (USFWS). Section 7(a) (2) of the Endangered Species Act (ESA) of 1973 as amended requires all federal agencies to review actions authorized, funded, or carried out by them to ensure such actions do not jeopardize the continued existence of listed species. Bull trout were listed under ESA primarily due to habitat threats. Habitat conditions are important in the recovery and conservation of bull trout. Spawning usually occurs in third and fourth order streams, in low gradient areas (less than 2 percent) with gravel cobble substrate. Proximity of cover for the adult fish before and during spawning is an important habitat component. Successful incubation of bull trout embryos requires water temperatures below 8o C, spawning gravels with low amounts of fine sediment and high gravel permeability. Mortality of eggs or fry can be caused by scouring during high flows, freezing during low flows, or deposition of fine sediments.	

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On September 30, 2010, the U.S. Fish and Wildlife Service designated critical habitat (CH) for bull trout throughout their U.S. range. Critical habitat includes those areas occupied by the species, on which are found physical and biological features that are essential for conservation of an ESA listed species and which may require special management considerations or protection. As the FEIS says: "Habitat conditions are important in the recovery and conservation of bull trout." But this project will not improve habitat instead it will harm bull trout habit when the new logging roads are built, old ones rebuilt, and the log haul roads used. The National Forest Management Act of 1976 - Prevents watershed conditions from being irreversibly damaged and protects streams and wetlands from detrimental impacts. Land productivity must be preserved. Fish habitat must support a minimum number of reproductive individuals and be well distributed to allow interaction between populations. **(11-174)** The project will effect bull trout in violation of the ESA, NEPA, NFMA, the Clean Water Act and the APA. The Forest Service must consult with the USFWS on the effect of the project on bull trout.**(11-175)** This project does not recover bull trout. It is an extinction project, not a project that will contribute to bull trout recovery. Please see the attached comments by Christopher A. Frissell, Ph.D on The 2014 Draft Recovery Plan. He said the recovery plan for bull trout for bull trout implies (and in a backhanded way specifies) that the USFWS assumes there is flexibility to make management choices deliberately allowing some core area populations of bull trout to go into decline or extinction, on the expectation others will appear from scratch, or disperse from severely depressed relict populations elsewhere in the Recovery Unit to arise in new locations. However this Draft Plan, the previous listing and recovery planning record, and the published literature present virtually no evidence to substantiate that new populations of bull trout have established in contemporary times, either at the Core Area scale or the next smaller scale of breeding populations. In this regard bull trout are the biological polar opposite of vagile species like wolves, which are demonstrated to be amenable to reintroduction and are proficient colonizers of new territory at the regional scale. On the other hand, we do have evidence that even small, so- called "relict" bull trout populations can rapidly re-establish migratory life histories, or expand extant spawning areas when changing habitat conditions allow it. But we do not know that they can establish new populations in previously unoccupied streams or watersheds under contemporary prevailing conditions. Hence from a scientific perspective, existing populations of bull trout, no matter how small and far-flung, must be viewed as the sole seed sources for future recovery.	**(11-174)** Fish/Hydro- The presence of bull trout has been documented in the project area in very low numbers. The decline of bull trout in the Little Blackfoot River basin and greater Blackfoot Core Area is attributed to hybridization, competition, predation, as well as habitat alterations downstream of this project area such as water diversion. This population is Functioning at Unacceptable Risk (FUR), given subpopulation size, little or no connectivity among other subpopulations. Survival and future recruitment could respond sharply to normal environmental events. **(11-175)** This is a duplicate comment. Please see response to comment (11-14).

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Livestock grazing occurs in seven grazing allotments in the Project area and causes sediment impacts, trampled or destabilized banks, increased nutrient loads in streams, and decreased density, diversity, and function of riparian vegetation that may lead to increased stream temperatures and further detrimental impacts to water quality. **(11-176)** Sincerely, And on behalf of: Michael Garrity Sara Johnson Alliance for the Wild Rockies Native Ecosystems Council P.O. Box 505 P.O. Box 125 Helena, Montana 59624 Willow Creek, MT 59760 406-459-5936 and for Steve Kelly, co-director Montana Ecosystems Defense Council, Inc. P.O. Box 4641 Bozeman, MT 59772 406.586.4421 Thank you for the opportunity to comment. Please accept these additional comments on the Telegraph Vegetation Project Draft Environmental Impact Statement on behalf of the Alliance for the Wild Rockies Montana Ecosystem Defense Council and Native Ecosystems Council.	**(11-176)** This is a duplicate comment. Please see responses to comments (11-171) and (11-173).
The project seems to implement the BIG GAME SECURITY FOREST PLAN AMENDMENT. We feel strongly that any big game security standard must involve "cover." **(11-177)** We believe that the existing 1986 Forest Plan Standard for big game security is actually a better STANDARD than the amendment being proposed because unlike the amendment it is actually measurable – as a standard should be. No scientific basis for the proposed amendment is provided. This is a violation of NEPA and NFMA. The big game security amendment should be addressed under Forest Plan Revision. **(11-178)** How will this amendment affect other species that need dense forest hiding cover or horizontal cover such as lynx, grizzly bears, pine martin, goshawks and wolverine? Please formally consult with the US FWS on how this amendment will affect lynx, lynx critical habitat, grizzly bears and bull trout; **(11-179)** Disclose the amount of big game (moose and elk) hiding cover, winter range, and security currently available in the area; **(11-180)** Disclose the amount of big game (moose and elk) hiding cover, winter range, and security during Project implementation; **(11-181)**	**(11-177)** The big game security standard has already been decided (see ROD March 2, 2016 at http://www.fs.usda.gov/project/?project=24091 and is not part of the Telegraph project decision. The Telegraph elk analysis in the FEIS has been updated to reflect this new standard which includes cover guidelines. See the Rocky Mountain Elk section in the FEIS. **(11-178)** The Forest Plan allows for site-specific project level exemptions: "[i]f it is determined during project design that the best way to meet the management area goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for that project…" (USDA 1986, p. II/14). **(11-179)** The big game amendment has been analyzed as part of the Divide Travel Plan effort and a Decision has been rendered (see 11-177). That analysis includes a discussion of the compatibility of the amended standard with other applicable Forest Plan standards including the Northern Rockies Lynx Management Direction. This comment is not applicable to the Telegraph project. **(11-180)** Elk hiding cover, winter range, and security are described in the Affected Environment, Habitat Considerations sections in the DEIS and FEIS. Moose habitat is described in the Topics not Analyzed in Detail section; discussions of site-specific project effects on riparian habitat and vulnerability of elk to hunting apply to moose as

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Disclose the amount of big game (moose and elk) hiding cover, winter range, and security after implementation; **(11-182**) Disclose the method used to determine big game hiding cover, winter range, and security, and its rate of error as determined by field review;"**(11-183)** This was not done in violation of NEPA, NFMA the APA and the Revised Forest Plan. The best available science, Christensen et al (1993),recommends elk habitat effectiveness of 70% in summer range and at least 50% in all other areas where elk are one of the primary resource considerations. According to Figure 1 in Christensen et al (1993), this equates to a maximum road density of approximately 0.7 mi/sq mi. in summer range and approximately 1.7 mi/sq mi. in all other areas. Do any of the 6th Code watersheds in the Project area meet either of these road density thresholds? It appears the Project area as a whole also far exceeds these thresholds. Please disclose this type of Project level or watershed analysis on road density.**(11-184)** Christensen et al (1993) state that if an area is not meeting the 50% effectiveness threshold of 1.7 mi/sq mi, the agency should admit that the area is not being managed for elk: "Areas where habitat effectiveness is retained at lower than 50 percent must be recognized as making only minor contributions to elk management goals. If habitat effectiveness is not important, don't fake it. Just admit up front that elk are not a consideration." The Project EIS does not make this admission. The Forest Service should provide an analysis of how much of the Project area, Project area watersheds, affected landscape areas, or affected Hunting Districts provide "elk security area[s]" as defined by the best available science, Christensen et al (1993) and Hillis et al (1991), to be comprised of contiguous 250 acre blocks of forested habitat 0.5 miles or more from open roads with these blocks encompassing 30% or more of the area. **(11-185)** The Forest Service fails to provide a rational justification for the deviation from the Hillis security definition and numeric threshold that represent the best available science on elk security areas. Thank you for your time. Sincerely, And on behalf of: Michael Garrity Alliance for the Wild Rockies P.O. Box 505 Helena, Montana 59624 406-459-5936 and for	well (see the Wildlife Analysis Approach appendix). In response to this comment, additional habitat information is provided in the Moose section of the FEIS. **(11-181)** Big game security during project implementation is described in the Elk Security during the Hunting Season section in the FEIS and is applicable to elk and moose (as described above in 11-56). There are no changes to hiding cover during project implementation; changes to hiding cover are manifested post-implementation (see 11-58 below). There are no changes to the amount of winter range during project implementation. Winter range is a fixed landscape attribute based on FWP data (see GIS project record). Effects to elk on winter range during project implementation is described in the Environmental Consequences for the action alternatives in the Winter Range and Thermal Cover section. **(11-182)** Big game security post project implementation is described in the Elk Security during the Hunting Season section in the FEIS and is applicable to elk and moose (as described above in 11-56). The amount of hiding cover post implementation is disclosed in the Regulatory Framework and Forest Plan Consistency section in the FEIS. **(11-183)** The methodology used to describe big game hiding cover, winter range, and security is described in the Assumptions, information used, and methodologies to determine effects to wildlife along with the rate of error for hiding cover only. See the metadata for elk and moose winter range maps in the project record for accuracy information. See also response to 11-55 **(11-184)** Habitat effectiveness is the degree to which a patch of habitat is able to support an animal or group of animals (see Glossary in FEIS). It is based on motorized route densities open to the public during the summer and is analyzed at the herd unit level in accordance with Christensen et al (1993, p. 3 – in project record) that the scale of the analysis needs to "recognize the project in a broader context of herd units…" (See Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife in the wildlife report in the FEIS). Habitat effectiveness in both the Jericho and Spotted Dog – Little Blackfoot herd units is 56%. This level of habitat effectiveness is in keeping with Christensen et al. (1993, p. 3) that for "areas where elk are one of the primary resource considerations habitat effectiveness should be 50 percent or greater". While elk are certainly a primary resource consideration in the project area and at the herd unit level (per Forestwide big game standards 1-6 (Helena NF Forest Plan, USDA 1986, pp. II/17-19), they are not the only consideration.

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Sara Johnson Native Ecosystems Council P.O. Box 125 Willow Creek, MT 59760 and for Steve Kelly, co-director Montana Ecosystems Defense Council, Inc. P.O. Box 4641 Bozeman, MT 59772 406.586.4421	**(11-185)** The Forest recently completed a programmatic amendment that replaces the hiding cover/open road density ration (original Forest Plan standard 4a) with a security analysis based on the concepts outlined in Christensen et al (1993) and Hillis et al. (1991) as modified to reflect local conditions in collaboration with MFWP, a basic tenet of Christensen et al. (p. 5) that "[i]t is essential that cooperation and coordination with State biologists be used to formulate criteria" and Hillis et al. that "strict adherence to the guidelines should be avoided". The security methodology – now the amended standard 4a – is described in Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife in the wildlife report in the FEIS.

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"Bark beetles are killing forests — but they might be saving them, too" By Maddie Oatman on 20 Mar 2015 http://grist.org/science/bark-beetles-are-killing-forestsbut-they-might-be-saving-them-too/?utm_campaign=daily_feed&utm_medium=email&utm_source=newsletter	**LR-1** Silv Lit Review - This article refers to the thinning of healthy lodgepole pine stands to prevent mountain pine beetle mortality. The Telegraph Vegetation Project proposes to regenerate stands where the vast majority of trees have already been killed, so is not applicable to this project.
"Area burned in the western United States is unaffected by recent mountain pine beetle outbreaks"	**LR-2** Lit Review Silv/Fuels – The purpose and need for the Telegraph Vegetation Project is not to prevent wildfire nor decrease the area burned by fire, it is to manage fuels for the safety of firefighters and the public, and to reduce residence time to minimize soil damage.
"Does wildfire likelihood increase following insect outbreaks in conifer forests?"	**LR-3** Lit Review Silv/Fuels - The purpose and need for the Telegraph Vegetation Project is not to prevent wildfire nor decrease the likelihood that one will occur, it is to manage fuels for safety of firefighters and the public.
http://www.esajournals.org/doi/10.1890/ES15-00037.1	**LR-4** Lit Review Silv/Fuels –This is a website link to the "Does wildfire likelihood increase following outbreaks in conifer forests?" and was responded to in LR-3.

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(Krankina and Harmon 2006)- Research Paper titled Forest Management Strategies for Carbon Storage. In: Forests, Carbon & Climate Change - Summary of Science Findings	**LR-5** In all essential respects, the Telegraph Vegetation Project subscribes to the three recommendations made by Krakina and Harmon (2006; page 87).See also the paper by Ter-Mikaelian et al. (2008). These authors conclude that sustainable forest management and use of wood products helps mitigate climate change. "Criticism of logging in a sustainably managed forest on the grounds that it contributes to climate change is unfounded. In fact, if one is truly concerned about the risks to the environment from climate change, then the case can be made that logging of sustainably managed forests should be encouraged."
August 06, 2015 4:45 pm • TOM KUGLIN Independent Record	**LR-6** Wildlife This publication is a report on a bear captured by Avon, MT after killing sheep. Grizzly bears and their habitat is discussed further within the Wildlife Specialist Report.
Please find attached, Keane and Arno (1993) reported that 42 percent of whitebark pine in western Montana had died in the previous 20 years with 89 percent of remaining trees being infected with blister rust.	**LR-7** Lit Review Silv- The presence of white pine blister rust is discussed in the Habitats of Special Concern specialist report, and included in the FEIS are design features to protect the remaining whitebark pine cone bearing trees as well as Seedlings and saplings.
Mahalovich et al 2006 – Whitebark Pine Germination, Rust Resistance, and Cold Hardiness Among Seed Sources in the Inland Northwest: Planting Strategies for Restoration A synthesis of several studies highlights above-average performing seed sources (n = 108) of whitebark pine (*Pinus albicaulis*), which practitioners can utilize for restoration, wildlife habitat improvement, and operational planting programs. It is the first report of this magnitude of blister rust resistance for this species. Whitebark pine does have genetic variation and demonstrated resistance to white pine blister rust, increasing from the southeast to the northwest in the Inland Northwest. Early outplanting reports have shown that some seedlings have frost damage or exhibit increased mortality in cold pockets or swales. Cold hardiness, measured in late winter on a smaller sample of sources (n = 55), also showed genetic variability increasing from the northwest to the southeast. Seed zones were delineated by Mahalovich and Hoff (2000) based on information on relative rust hazard and demarcation of mountain ranges. These geographic seed zones support conservative seed transfer with a special emphasis on blister rust infection levels. Sufficient variability exists to maintain these seed zone boundaries, because whitebark pine exhibits	**LR-8** This article is not site-specifically relevant to the project. No planting of whitebark pine is planned in the Telegraph Vegetation Project. The effects of proposed treatments on whitebark pine are discussed in specialist reports.

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more of an intermediate adaptive strategy as compared to the generalist adaptive strategy of western white pine (*P. monticola*). Based on this composite information, it is feasible to outplant whitebark pine without the additional delay of waiting until blister rust resistant seedlings are developed from a breeding program. There are sources within each seed zone that have both rust resistance and greater cold hardiness, so those factors should not limit tree planting for restoration or critical wildlife habitat improvement objectives.	
Cohen, 1999 Reducing the Wildland Fire Threat to Homes: Where and How Much? Understanding how ignitions occur is critical for effectively mitigating home fire losses during wildland fires. The threat of life and property losses during wildland fires is a significant issue for Federal, State, and local agencies that have responsibilities involving homes within and adjacent to wildlands. Agencies have shifted attention to communities adjacent to wildlands through pre-suppression and suppression activities. Research for the Structure Ignition Assessment Model (SIAM) that includes modeling, experiments, and case studies indicates that effective residential fire loss mitigation must focus on the home and its immediate surroundings. This has significant implications far agency policy and specific activities such as hazard mapping and fuel management.	**LR-9** – Fuels This is a publication that focuses on mitigating home fire losses during wildland fires. The Telegraph Vegetation Project purpose and need does not involve mitigating for private structures being lost during wildland fires as that is outside of the scope of this project and the US Forest Service has no jurisdiction on private lands.
Graham, et al., 1999a	**LR-10** – Fuels This literature has been reviewed. Predicted fire activity is discussed further in the fire/fuels report.
Deeming 1990; Wagel and Eakle 1979; Weaver 1955, 1957	**LR-11**- This references climax ponderosa pine forests. The habitat types found in the Telegraph Vegetation Project area do not fit this description. Please see the Introduction to Vegetation Introduction Report.

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Veblen (2003) AN INTRODUCTION TO KEY ISSUES IN FIRE REGIME RESEARCH FOR FUELS MANAGEMENT AND ECOLOGICAL RESTORATION The basic premise behind many projects aimed at wildfire hazard reduction and ecological restoration in forests of the western United States is the idea that unnatural fuel buildup has resulted from suppression of formerly frequent fires. This premise and its implications need to be critically evaluated by conducting area-specific research in the forest ecosystems targeted for fuels or ecological restoration projects. Fire regime researchers need to acknowledge the limitations of fire history methodology and avoid over-reliance on summary fire statistics such as mean fire interval and rotation period. While fire regime research is vitally important for informing decision making in the areas of wildfire hazard mitigation and ecological restoration, there is much need for improving the way researchers communicate their results to managers and the way managers use this information.	**LR-12** – Fuels The best available science was used to aid in the design of the Telegraph Vegetation Project. Please refer to the fuels report for further information.
Ament (1997). Fire Policy for the Northern Rocky Mountains (U.S.A.). Publisher not available with article. www.landsinfo.org/ecosystem_defense/Science_Documents/Ament_1997.doc	**LR-13** – Fuels This reference is not site-specific to this project. This paper discusses fire policy as applied in the northern Rocky Mountains. This article recommends five items for future action. Items related to maximizing prescribed natural fire, fire suppression strategies and private land development are outside the scope of this analysis and more appropriately addressed at the forest plan level.
Ercelawn, 1999 **End of the Road -- The Adverse Ecological Impacts of Roads and Logging: A Compilation of Independently Reviewed Research. 130 pp. Natural Resources Defense Council. New York. Available online at: http://www.nrdc.org/land/forests/roads/eotrinx.asp** Ercelawn, 2000 **Wildlife Species and Their Habitat: The Adverse Impacts of Logging – A Supplement to End of the Road. 41 pp. Natural Resources Defense Council. New York. Available online at: http://www.nrdc.org/land/forests/eotrsupp.asp**	**LR-14**- Wildlife The effects of roads, both the existing and the roads built then obliterated immediately following timber removal are analyzed along with the design features and effects disclosed in the DEIS. Road effects are discussed by the affected resources including hydrology, noxious weeds, soils and wildlife. Effects to wildlife from roads including barriers to movement, fragmentation of interior habitat, disturbance to wildlife and changes in habitat are considered

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Bull et al., 2001 **Bull, Evelyn L. et al. 2001. "Effects of Disturbance on Forest Carnivores of Conservation Concern in Eastern Oregon and Washington." Pacific Northwest Research Station. Forestry and Range Sciences Laboratory. La Grande, OR**.	**LR-15** – Wildlife This paper provides good information and is referenced for the Telegraph Vegetation Project. The potential effects from thinning, prescribed fire, and roads to forest carnivores that inhabit the Telegraph Vegetation Project area are discussed. The information in this paper should be kept in context with carnivore habitat conditions outside the project area in order to more accurately describe the potential effects. Effects from the proposed actions on lynx and other carnivores are analyzed in the wildlife report.
Ruggiero, et al., 1994	**LR-16** – This literature was also referenced within the wildlife report.
Marcot and Murphy, 1992 **Marcot, B. G., and D. D. Murphy. In press. "Population viability analysis and management. " In: Szaro, R., ed. Biodiversity in Managed Landscapes: Theory and Practice. Proceedings of a conference 13-17 July 1992, Sacramento CA. Oxford University Press.** http://www.landsinfo.org/ecosystem_defense/Science_Documents/Marcot_Murphy_1992.pdf	**LR-17** – Wildlife This is a research paper using Federal Policy, regulations and the laws as a basis for identifying the need for a science based assessment of potential impacts to wildlife resources. It describes methods to manage for population viability and other mandated objectives. The paper is really more related to those who need to manage a specific wildlife population related to overall forest ecosystem management.
Holt and Hillis, "Current Status and Habitat Associations of Forest Owls in Western Montana" (1987). **Holt, D. W., and J. M. Hillis. 1987. "Current status and habitat association of forest owls in western Montana." USDA Forest Service, Gen. Tech. Rep. RM-142, Ft. Collins, CO.**	**LR-18** Lit Review Wildlife- This is not a science based article, but rather one expressing opinions on past Forest management. Owl species are addressed in the resource report be covered by addressing habitat conditions and Forest indicator species.
Noss, 1993 **Noss, Reed F. Ph.D. 1993. "The Wildlands Project Land Conservation Strategy." *Wild Earth Journal, Special Issue*: 10-26**	**LR-19** – The citation notes the need for using conservation biology and having a landscape scale concept related to a project design and assessment. In the Telegraph Vegetation Project, the effects of proposed activities are analyzed as required and as necessary on several scales: by species, forest stand, the project (treated) area and the landscape. These different levels are reflected in the various resource-specific reports. Design features, such as streamside buffers, will follow management direction from the Helena Forest Plan and other pertinent documents. The Forest Plan also includes direction to provide for wildlife present on the forest. The purpose and need for the Telegraph Vegetation Project integrates restoration with socioeconomic considerations and actions include project design features to maintain habitat for wildlife in the project area.

Telegraph Vegetation Project Literature Submitted for Review Letter #11: Michael Garrity, AWR	
Mealey 1983 **Mealey, Stephen P., 1983. Wildlife Resource Planning Assistance to the Payette and Boise National Forests. April 1, 1983. U.S. Forest Service, Land Management Planning Systems, 3825 E. Mulberry, Fort Collins, Colorado 80524.**	**LR-20** – Wildlife These are meeting notes about developing a procedure to determine viability population levels on forests compatible with requirements of the Forest Service planning regulations (36 CFR 219.19 and 219.27); and, to recommend a procedure for forests to incorporate wildlife population and habitat objectives in Version II of FORPLAN. The paper outlines the procedures developed for use on the Payette and Boise National Forests. The Helena Forest Plan includes standards and guidelines designed to comply with the Forest Service planning regulations to maintain habitat for wildlife species. The Telegraph Vegetation Project incorporates project design features to move the project area towards the desired conditions identified in the forest plan. Anticipated effects are analyzed in the wildlife report.
LeJeune and Seastedt, 2001	**LR-21** – Weeds This literature has been referenced in the Noxious Weeds report.
Tyser and Key 1988, Ridenour and Callaway 2001	**LR-22**- Weeds Ridenour and Callaway 2001 has been referenced in the Noxious Weeds report.
Harvey et al., 1994	**LR-23** – Weeds/Soils This literature was referenced in the Soils specialist report.
Lacy, 2001 **Lacy, Peter M. 2001. *Our Sedimentation Boxes Runneth Over: Public Lands Soil Law As The Missing Link In Holistic Natural Resource Protection.* Copyright © 2001 Environmental Law; Peter M. Lacy. Originally published at 31 Envtl. L. 433 (2001).**	**LR-24** – Soils Article addresses a gap in public law as there is a failure to immediately address the soil resource. Article does not apply to the Telegraph Vegetation Project area as it is beyond the scope of this analysis to change public land policy.

Telegraph Vegetation Project Literature Submitted for Review Letter #11: Michael Garrity, AWR	
Juel, 2003 **Juel, J. 2003. "Old Growth at a Crossroads: U.S. Forest Service Northern Region National Forests' noncompliance with diversity provisions of their Forest Plans and the National Forest Management Act Regulations." August, 2003. The Ecology Center, Inc. Missoula, Montana.**	**LR-25** - This is a fairly comprehensive report on 13 National Forests in the PNW relative to compliance with their Forest Plans. Ecological old growth definitions developed by Green (1992, errata corrected 2005) have been incorporated into the Helena NF plan. Using Forest Inventory and Analysis (FIA) data, FACTS (harvest and fire activity data), exam plot data loaded into FSVEG (Field Sampled Vegetation), and Aerial Damage Survey data from 2009, the Helena created a map of all known old growth. This map is being used in the Telegraph Vegetation Project analysis. No tree removal treatments would be taking place in mapped old growth. In addition, in proposed treatments, large and old live trees would not be cut except as needed for safety reasons. The effects of treatments on old growth have been analyzed and can be found in project records.
Frissell and Bayles, 1996 **Frissell, C. A. and D. Bayles. 1996. Ecosystem Management And The Conservation Of Aquatic Biodiversity And Ecological Integrity. American Water Resources Association. Water Resource Bulletin. Vol. 32. No. 2. August 1996.**	**LR-26** - This paper is about ecosystem management, especially the effects of land management practices on streams and water resources. It addresses the need to preserve watersheds and aquatic systems with the highest amount of integrity to preserve biodiversity. This topic generally applies to the project. Many articles cited in this paper are pertinent to the project and were considered during the analysis of project effects.
Depro, Brooks M., Brian C. Murray, Ralph J. Alig, and Alyssa Shanks. 2008. Public land, timber harvests, and climate mitigation: quantifying carbon sequestration potential on U.S. public timberlands. Forest Ecology and Management 255: 1122-1134. **Depro, Brooks M., Brian C. Murray, Ralph J. Alig, and Alyssa Shanks. 2008. "Public land, timber harvests, and climate mitigation: quantifying carbon sequestration potential on U.S. public timberlands." *Forest Ecology and Management* 255: 1122-1134.**	**LR-27** Lit Review All Resources- In the study cited above, the authors conducted a very broad and general analysis of carbon sequestration potential on all of the public timberlands in the U.S. In the study they compared potential carbon sequestration for a "no timber harvest" alternative in which no carbon would be removed from public forests by management actions, and a "harvest" alternative. We consider the study results to be of marginal utility on a project level basis because of this broad and general nature of the study and the gross assumptions that the study was based upon. For example, the authors assumed for the no timber harvest alternative that fire, insects and diseases, and natural mortality would remove timber volume at rates computed as having occurred between 1990 and 2000, which we do not consider realistic given the increase in wildfire area burned and damaged by insect activity within the last decade, and given that as stocking increases, so does density-related mortality. They also assumed that timber volume would be removed at a rate depicted in the 1989 Forest Service Timber Assessment which was based

Telegraph Vegetation Project Literature Submitted for Review Letter #11: Michael Garrity, AWR	
	upon annual harvest estimates from forest plans drafted in the late 1980's, which would lead to an annual estimate much higher than reality. For example, the Malheur Forest Plan estimated an annual sale quantity of about 204 million board feet (MMBF), in the early 1990s, the forest was selling about 100 MMBF annually; annual sales dropped abruptly in the mid-1990s to the teens and low 20s and has risen slightly in recent years to about 27 MMBF in 2010. In contrast to the Depro et al. (2008) study cited above, there are a number of studies that have been produced in the last 10 years addressing carbon sequestration for various forest ecosystems, fire regimes, and treatment types. In the Stonewall Vegetation Project, appropriate studies are referenced in a discussion of the effect of proposed treatments on carbon sequestration and climate change, and the effects of climate change on forests in the Telegraph Vegetation Project.
Harmon, Mark E. 2001. Carbon sequestration in forests: addressing the scale question. Journal of Forestry 99:4: 24-29. **Harmon, M. 2001. "Carbon Sequestration in Forests, Addressing The Scale Question." Journal of Forestry. April 2001. Pages 24-29.**	**LR-28** In this document, the author discusses carbon sequestration in temporal and spatial scales. He acknowledged that forests cannot remove carbon from the atmosphere in perpetuity, and that through time their ability to accumulate additional carbon approaches zero because the rate that material accumulates is equal to the rate that it is lost through decomposition or consumption by fire. On the landscape level, Harmon (2001) suggests that a landscape can be in balance in terms of carbon stores even though individual stands are being disturbed, with a release of carbon, as long as a constant age structure is maintained over the landscape.
Harmon, Mark E, William K. Ferrell, and Jerry F. Franklin. 1990. Effects of carbon storage of conversion of old-growth forest to young forests. Science 247: 4943: 699-702 **Harmon Mark E.; William K. Ferrell; Jerry F. Franklin. 1990. "Effects on Carbon Storage of Conversion of Old-Growth Forests to Young Forests." Science, New Series, Vol. 247, No. 4943. (Feb. 9, 1990), pp. 699-702.**	**LR-29** Harmon et al. (1990) in this paper discuss a modeling exercise in which they modeled carbon storage in western Oregon and Washington old-growth forests and in forests converted to a younger forest. They included in their modeling exercise, carbon stored as long-term and short-term wood products, changes in carbon storage due to a single wildfire over a 450 year period, and changes in carbon storage under a 60-year cutting regime with and without residual debris removed and with and without wood converted to long-term storage as wood products. Over the modeling period, they modeled the old-growth forest as storing more carbon than other treatments, but at the end of a 350-year period under the 60-year rotation with carbon stored as long-term forest products scenario, carbon

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	storage approached 90 percent of the old-growth/no-treatment storage scenario. This study is not directly applicable to forests in the Telegraph Vegetation Project area because the forest type modeled, (Douglas-fir/hemlock forest located west of the Cascade Mountains, with some of the highest productivity sites in the world and with a very infrequent disturbance regime), is very different than the forests found in the Telegraph Vegetation Project area. Forests being proposed for treatment in the Telegraph Vegetation Project are growing on less productive sites, and experience frequent to moderately frequent low-severity and mixed-severity fire, as well as bark beetle epidemics, both of which change forest carbon storage dynamics and which were not modeled by Harmon et al. (1990). In this article, the authors run models to quantify the carbon fluxes (C lost and C sequestered) in old growth and converted young forests. The authors found that on-site carbon storage is reduced considerable in converted young forests and does not return to old-growth levels for at least 200 years. They also conclude that conversion of old growth to younger forests has increased atmospheric C in western WA and OR in the past 100 years. This study is not directly applicable to forests in the Telegraph Vegetation Project area because of the differences in productivity, biomass accumulation, and fire regimes between western Oregon and Washington Douglas-fir/hemlock forests and the forest types and sites found within the project area. It is indirectly applicable because, in general, big trees contain more carbon, and forests without fires store more carbon. The topic of carbon sequestration on public lands applies in general to the Telegraph analysis. This project does not, however, propose to convert old growth into younger stands so the specific article does not necessarily apply.

Telegraph Vegetation Project Literature Submitted for Review Letter #11: Michael Garrity, AWR	
Harmon, Mark E, and Barbara Marks. 2002. Effects of silvicultural practices on carbon stores in Douglasfir – western hemlock forests in the Pacific Northwest, USA: results from a simulation model. Canadian Journal of Forest Research 32: 863-877. **Harmon, Mark E, and Barbara Marks. 2002. "Effects of silvicultural practices on carbon stores in Douglas-fir – western hemlock forests in the Pacific Northwest, USA: results from a simulation model". *Canadian Journal of Forest Research* 32: 863-877.**	**LR-30** - Harmon and Marks (2002) modeled carbon sequestration in western Douglas-fir/hemlock forests protected from fire. Their modeling indicated that these forests, when protected from fire stored the greatest amount of landscape-level carbon. The study found that agricultural fields stored the least and forest protected from fire stored the most landscape-level carbon. Conversion of old-growth forests into any other type of management or disturbance regime resulted in a net loss of carbon whereas conversions of agricultural systems to forest systems have the opposite effect. The study found that the three most important factors for developing optimum C storage, in order of importance, are: (1) rotation length, (2) amount of live biomass harvested, and (3) amount of detritus removed by slash burning. They observed that in managed forests under a harvest/regeneration management regime, carbon stores increased as tree harvest rotation length increased but decreased as the fraction of trees harvested and detritus removed during slash burning increased. Their simulations indicated that "partial harvest and minimal fire use may provide as many forest products as the traditional clearcut – broadcast-burn system while increasing carbon stores." This study is not directly applicable to forests in the Telegraph Vegetation Project area because of the differences in productivity, biomass accumulation, and fire regimes between Douglas-fir/hemlock forests located in the cascades of Oregon and the forest types and sites found within the project area.
Homann, Peter S., Mark Harmon, Suzanne Remillard, and Erica A.H. Smithwick. 2005. What the soil reveals: potential total ecosystem C stores of the Pacific Northwest region, USA. Forest Ecology and Management 220: 270-283. **Homann, Peter S., Mark Harmon, Suzanne Remillard, and Erica A.H. Smithwick. 2005. "What the soil reveals: potential total ecosystem C stores of the Pacific Northwest region, USA." *Forest Ecology and Management* 220: 270-283.**	**LR-31** - In this study the authors modeled the total ecosystem carbon in the area from the Pacific ocean to east of the Cascade range in western Oregon and Washington using state soils geographic databases under the hypothetical condition of total old-growth forest coverage. It establishes a theoretical maximum amount of carbon that could be stored in the area without consideration of land ownership and use. They did include two Oregon eastside study plots and found that those ponderosa pine forests had lower carbon storage than areas to the west with higher precipitation and productivity. Most of the estimates derived from the Hormann et al. (2005) study are not applicable to the Stonewall Vegetation Project area due to differences in site productivity, biomass accumulation, forest types, and disturbance regimes between forests in western Oregon and Washington and in the Telegraph Vegetation Project area. The study usefulness is limited to simply showing that the

Telegraph Vegetation Project Literature Submitted for Review Letter #11: Michael Garrity, AWR	
	dryer the site then the lower the maximum carbon that can be stored. This article maps Carbon stores in forests of western WA and OR. The study found that 63% of total ecosystem organic carbon (TEC) was in the vegetation, 13% in the woody detritus, 3% in the forest floor, 7% in the 0-20 cm mineral soil, and 13% in the 20-100 cm mineral soil. These measurements were all taken in old-growth forests and then extrapolated for the entire region to determine the carbon storage potential if all forest were converted to old growth. The article is not very applicable as it examines soils in western OR and WA, which have different soils, climate, vegetation, and disturbance regimes from the Telegraph analysis area.
McKenzie, Donald, Ze'ev Gedalof, David L. Peterson, and Philip Mote. 2004. Climatic change, wildfire, and conservation. Conservation Biology 18:4: 890 -902. **McKenzie, Donald, Ze'ev Gedalof, David L. Peterson, and Philip Mote. 2004. "Climatic change, wildfire, and conservation." *Conservation Biology* 18:4: 890 -902.**	**LR-32** - This paper is a general synthesis and discussion of research pertaining to historical fire regimes and climate variability, a statistical modeling exercise relating projected changes in climate and future fire regimes, and a discussion of their modeling exercise results and conservation. This study examines climate change and the anticipated increased in amplitude and duration of fire weather in the Western United States and how that will change the distribution and abundance of dominant plant species in some ecosystems. For Montana they found a high correlation between area burned and increased mean summer (June, July, and August) temperatures and decreased mean summer precipitation. Their results "suggest that relatively modest changes in mean climate could lead to substantial increases in area burned, particularly in crown-fire ecosystems." They found that Montana, Wyoming, and New Mexico "appear to be acutely sensitive, especially to temperature changes, and may respond dramatically to global warming." Their paper is consistent with other regional climate change modeling as well as the potential effects of climate change on fire regimes and ecosystems discussed in analysis documents. The paper in general supports the Telegraph Project treatments given the project purpose and need, but is limited in how it can be used to assess site-specific effects.

Comments	Response to Comments
Letter 12: Gary Murdock	
Roads: I feel the cost of constructing and restoring back to original contour is more than the stated $6000.00 per mile. **(12-1)** More information is need. The proposed new road to be constructed is thru and area that is prone to spring flooding. Is this new road really necessary? **(12-2)** I believe this new road will only add the flooding issue and add more sedimentation to the river. Elk security and hiding cover is lost in ALT.2 and Alt.3 I understand the bid to build the new bridge has already been awarded. How is this done before the Telegraph Vegetation Project have been completed? In the Telegraph Vegetation Project I do not see anything addressing the dust from this activity, **(12-3)** which would be considerable depending on time of year for the residents along this corridor. I see nothing that addresses the damage to the Little Blackfoot road as result of heavy haul traffic. This road serves many residents which is a county road that we pay to have maintained if your project is going to degrade this road the Forest should affect the repairs.**(12-4)** I believe alternative Alt 1 (One) should be selected until further review is completed. Respectfully, Gary Murdock 608 West Main Elliston, Montana 59728	**(12-1)** Costs were updated for the FEIS and are presented in the Economics Specialist Report and supporting documentation in the project record. Costs were developed using the Forest Service R1 Roads Cost Guide 3/13 in addition to local knowledge of the area. Mr. Murdock attended an open house for the Telegraph project at the HLC office in Helena, a small group of FS specialists review the source documents and the specific details for road construction costs in the Regional Cost Guide and how they applied to the Telegraph project, he indicated that he better understood the costs associated with temporary roads within timber sales. **(12-2)** The new road proposed for construction (referred to as 4100-New in the FEIS) is a re-routing of an existing road (FSR# 123) that currently runs through the floodplain. The new road segment will be located upslope of the stream and floodplain. See the Transportation and Hydrology specialist reports completed for the FEIS for more details. **(12-3)** A wetting agent (water or other dust-reduction material) is proposed to be applied as needed to decrease or eliminate dust generated from implementation activities on aggregate and native surface NFS roads to provide for air quality and public safety. **(12-4)** We will maintain haul routes under National Forest System jurisdiction to BMP standards for implementation of this project. We have discussed the project with the Powell County Commissioners and they understand the concerns of many residents regarding the County Roads within the project area.
Letter 13: Greg Munther, BCHAA	
Montana Backcountry Hunters and Anglers is composed of over 400 engaged Montana hunters and fishermen whose mission, in part, is assuring public land wildlife and fish habitats are maintained or enhanced. Due to private land access restrictions, most Montana hunters hunt the 30% of Montana that are in public ownership. The outcome of projects such as Telegraph directly affect the future opportunities for Montana hunters. In general, while we believe there are wildlife benefits in some timber projects, we believe this project is intentionally designed to avoid wildlife commitments made in the 1986 Helena Forest Plan. Specifically we believe the action alternatives do not adhere to Forest Plan Wildlife Standards 1, 3, 4a, 6.1, 6.2, 6.7. **(13-1)** It appears that moving ahead with this project without approval of the Elk Security Amendment is pre-decisional, and therefore not in compliance with NEPA/NFMA. **(13-2)**	**(13-1)** Consistency with Forest Plan wildlife (big game) standards is described in Appendix B of the FEIS. That consistency analysis concluded that the project meets standards 2, 3 (hiding cover), 4a (as amended by the *Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area*), 6.1, and a portion of 6.7. The potential need for a site-specific amendment for standards 1, 3 (thermal cover), and a portion of 6.7 was articulated in the DEIS and is carried forward in the FEIS. The site-specific amendment would be needed to meet the purpose and need of the project and should not compromise the ability of the Forest to realize the population potential put forth in the Forest Plan (Helena NF Forest Plan, USDA 1986, p. V/5). See also the Rocky Mountain Elk, *Conclusions* section in the FEIS. **(13-2)** The *Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area* was signed on March 2, 2016, and the amended standard described in that decision replaces standard 4a analyzed in the Telegraph DEIS. The FEIS analysis is updated to reflect the amended standard (see the

Comments	Response to Comments
	Rocky Mountain Elk section, *Elk Security during the Hunting Season).*
As Dale Bosworth, former Forest Service Chief, stated: "It is not what we take, but rather what we leave that is important." That is exactly the issue with this project. What will be left for elk security when this project is completed? **(13-3)** Will it be better or worse for elk security and elk habitat? We strongly believe that elk thermal cover **(13-4)** will be lost as well as elk security. **(13-5)** And we also question what will be gained from this project. The Forest Service has, through 100 years of effective fire suppression, created conditions the Forest now believes is hazardous. However, the location of this project is removed from WUI areas and science concludes the most effective structural protection is within 200 feet of structures. **(13-6)** The economics of removal of dead and dying lodgepole is likely negative when the total project costs are tallied. **(13-7)** Fire is a natural event and has created "healthy" forests for thousands of years without interference from man. When a fire burns, the standing dead provide some cover, and falling snags provide a "jackstraw" that provides excellent deterrent from hunters. It is effective elk security. And new trees soon fill in to create visual cover. In contrast, logging opens roads and skid trails through these intact stands, which fragments and provides hunter "conduits" for walking hunters, bicycle hunters, and horseback hunters. **(13-5)** So, as Dale Bosworth, states ….What is the Helena Forest leaving in regard to elk and elk security? If this project is successful in avoiding legal challenges, we request the following: 1) All roads within the project area be closed to the public during and after the project. **(13-8)** 2) All roads, less those serving as primary access routes beyond the project area, be recontoured and woody debris placed over them to serve as effective deterrents to hunters**. (13-9)** 3) Enforcement of travel restrictions be prioritized on and around the project area. **(13-10)** 4) Skid trails be restored so they do not function as hunter corridors. **(13-11)** The proposed Divide Travel Plan be changed to reduce public access in the vicinity of the project to compensate for the lack of cover. **(13-12)** "Space," if large enough with dissected terrain features, can compensate, in part, for lack of cover. Thank you for the opportunity to comment. greg munther Greg Munther, Co-chairman Montana Backcountry Hunters and Anglers	**(13-3)** The effects of the project on elk security during the hunting season as defined by the amended standard 4a are described in the FEIS (see the Rocky Mountain Elk section, *Elk Security during the Hunting Season).* **(13-4)** The analysis in the DEIS and FEIS discloses that thermal cover will be removed in the action alternatives and as such a site-specific amendment would be needed in order for the project to proceed (see the Rocky Mountain Elk section, *Winter Range and Thermal Cover).* **(13-5)** See 13-3. The effects of the project on elk security during the hunting season as defined by the amended standard 4a are described in the FEIS which includes an analysis of the effects of logging, temporary routes in elk security areas, and closed roads used for project activities (see the Rocky Mountain Elk section, *Environmental Consequences*). Also, *Wildlife Appendix B in Appendix D – Wildlife Appendices* in the FEIS includes a discussion of the role of standing dead trees as hiding cover. **(13-6)** This project has a majority of the project area, approximately 16,913 acres of the 23,669 project area acres are within the WUI (71%). Please see fire/fuels report. **(13-7)** It is anticipated that removal of dead lodgepole pine would generate revenue as multiple products including sawtimber, post & pole material, firewood, pulp and other biomass type material. **(13-8)** All temporary roads would be closed to the public during project implementation and decommissioned post implementation (see the *Conclusions* section in Rocky Mountain Elk). As for closing all roads with the project area during and after the project, only those roads for which the Divide Travel Plan decision identified as closed would indeed be closed. The Telegraph project is not a travel planning decision. **(13-9)** See 13-8. **(13-10)** The Divide Travel Plan record of decision was signed 3/1/2016. Education and enforcement of this travel plan will be a priority for the Helena Ranger District for the next several years. The increased activity in this area as a result of this project (Telegraph) will also aid in this effort. This project also incorporates several travel plan implementation components which will aid in enforcement. **(13-11)** See Soils Specialist Report and chapter 2 of the FEIS. **(13-12)** Beyond the scope of this project, please refer to the Divide Travel Plan.

Comments	Response to Comments
Letter 14: Bill Pierce	
I generally favor the proposed project to clear dead standing trees, logging, and related timber management activities in the Telegraph drainage south of Elliston. The more aggressive alternatives seem the most advisable to me given the condition of the forest in that area. I would suggest that the Forest Service try and maintain reasonable access to these same areas as much as possible for recreational use during the logging and thinning process, both motorized and non-motorized**.** **(14-1)** Even though it is not directly part of this area, I would encourage the Forest Service to look toward a thinning project on the 'Elliston Face'. **(14-2)** This area should be a future priority due to the high fire danger and proximity to the townsite of Elliston. Bill Pierce P.O. Box 130 Elliston, MT 406-443-4637 bill@pierce-builders.com	**(14-1)** While maintaining recreational opportunities during implementation of this project is a high priority, a certain degree of temporary motorized vehicle travel restrictions or delays should be expected. Several design features are included to address timing of project activities such as limiting log haul on weekends and Federal holidays and during the first two weeks of big game rifle season. It is also important to recognize that potential short term delays and area closures during implementation may be needed to ensure public safety. **(14-2)** Thank you for your comment. Unfortunately due to the numerous high priority projects in various phases of planning on the Helena Ranger District we are unable to take on additional analysis of the Elliston Face at this time. I acknowledge the community support for a project in this vicinity and we'll consider a project here when we again have capacity to add to our program of work.
Letter 15: Tom Thomas	
My thoughts on the Telegraph Vegetation Project are to split the proposed sale from one large sale into multiple smaller sales. **(15-1)** I am part of a smaller, local logging operation and would like the chance to work on the project. One large sale would make it impossible for us to compete with the large mills in the bidding process of obtaining a timber sale. I feel this project is extremely necessary for the health of our forests. Along with the financial and economic impact it could have for our local economy. As an outdoor recreationalist who spends a lot of time in the woods, I feel the area needs to be cleaned up for safety issues, overall health of the forest and to diminish the effects of a catastrophic wildfire. I just hope it can be completed before it's too late! Thank you! Sincerely, Tom Thomas	**(15-1)** We are currently planning on advertising up to three timber sales. These sales would be based on logical geographic breaks and transportation system.

Comments	Response to Comments
Letter 16: Jim Darfler	
We are submitting a comment concerning Telegraph Vegetation Project #30353. At this time we are in favor of the project, as we believe it would significantly help reduce the potential of a catastrophic fire event(s). We also feel it would help protect private property. Sincerely, Darfler Family, LLC	**(16-1)** Thank you for your comments
Letter 17: Dave Chell	
Ref: Phone conversation. He supports the project and indicated that if we needed access across his property (he didn't think it would help) to please contact him. **(17-1)** Dave Chell	**(17-1)** Thank you for your comments.
Letter 18: Dana David	
Please Keep me on your mailing list. **(18-1)** David Dana P.O. Box 99 Elliston, MT 59728	**(18-1)** Thank you for your comments.
Letter 19: DNRC	
The Southwestern Land Office and the Central Land Office of the Montana Department of Natural Resources and Conservation (DNRC) are supportive of the work being proposed in the Telegraph Vegetation Project. The DNRC applauds the Helena National Forest (HNF) for proposing a project that will meet multiple resource objectives while bolstering local economies. This project is important in achieving Governor Bullock's Forest in Focus objectives. The project boundary is partially within and immediately adjacent to the Priority Landscapes designated under the 2014 Farm Bill. Specifically, the project achieves the Governor's objectives by: 1) promoting active forest management and sustainable timber harvest; 2) restoring forests and watersheds, white reducing fire risk, improving habitat and water quality, and the other amenities we rely upon our forests to deliver; and 3) providing sustainable timber to local mills and contractors. The DNRC has significant acreage of direct wild land fire protection adjacent to this project. DNRC also provides assistance to Powell County for lands the County protects; approximately 50% of the Telegraph Creek project boundary is within the Powell County Community Wildfire Protection Plan. Fuels reduction work in Telegraph Creek drainage is essential to	

Comments	Response to Comments
creating a safe working environment to position fire fighters to be successful to protect the values at risk.	
The DNRC is contributing towards the success of this project by supporting the replacement of the Golden Anchor Bridge, a necessary haul route in the Telegraph Creek area. The bridge construction in advance of the Telegraph Vegetation Project will expedite timber removal and allow for additional restoration projects to be completed with timber receipts. We encourage the HNF to remove the high impact sediment road near the bridge and within the river's floodplain to improve water quality and improve wildlife habitat. **(19-1)** The DNRC appreciates the changes made in Alternative 3 to address concerns raised the scoping period specific to wildlife and watershed concerns. Alternative 3 will meet the purpose and need of the project; increasing forest resiliency, reducing fuels, and improving watershed values. This alternative also addresses cover for big game and improves watershed conditions by decommissioning roads and improving road stream crossings, We, however, would like to see this project improve resiliency to disturbances such as insects, disease and fire and improve conditions for fire suppression as well as public and firefighter safety to the maximum extent practicable through active forest management. We are confident the HNF will make a decision that best meets the purpose and need addressing forest resiliency, fuels reduction, while improving watershed and wildlife conditions. Both Alternative 2 and 3 meet the objective of providing forest products that will support local mills and contractors, Maintaining a forest products infrastructure is essential to ensuring future restoration and forest work can be accomplished on all ownerships, Thank you for the opportunity to comment on this project. We believe this project will have benefits across ownership boundaries in the project area. Sincerely, Mike O'Herron Southwestern Land Office Area Manager Hoyt Richards Central land Office Area Manager	**(19-1)** We acknowledge your comments and support for the proposed road relocation and changes included in Alternatives 3 and 4. Potential funding sources for the decommissioning and restoration of the section of FSR 123 which interrupts channel processes and floodplain function on a dynamic reach of the Little Blackfoot River are currently being explored.

Letter 20: Stan Fraiser, HHAA Comments	Response to Comments
Helena Hunters & Anglers Association is a nonprofit Helena, Montana based organization dedicated to protecting and restoring fish and wildlife to all suitable habitats and to conserving all natural resources as a public trust, vital to our general welfare. HHAA promotes the highest standards of ethical conduct and sportsmanship, and promotes outdoor recreation opportunity for all citizens to share equally. Members of HHAA depend on healthy, functional, intact public lands of the Helena National Forest because they sustain and nurture our way of life. The Helena Hunters and Anglers Association ("HHAA") offer the following comments. The proposal would exempt this project from several wildlife standards and guidelines which will reduce both summer and fall hiding cover. This is a discouraging approach. There is little discussion of how wildlife habitats will be enhanced or even maintained. **<u>Purpose and Need: Wildland Urban Interface</u>** Well over 90% of the Telegraph project area occurs in the LOW RISK fire category according to the DEIS map (DEIS pg. 9), "Telegraph Vegetation Project Area Vicinity and the Tri-county Wildland Urban Interface." And, more than 50 percent of proposed regeneration harvests (essentially clearcuts) are at least 6 to 10 miles from Elliston, the described population center in the Wildland Urban Interface (WUI). However, it is unclear where the map on page 9 of the DEIS originated. The attached Tri-county map (taken from the FEIS of the Hazardous Tree Project) clearly shows that the Telegraph project is entirely outside any WUI area. A The Tri-County Fire Working Group Plan (2005) states: "we defined our wildland urban interface (WUI) boundary as the area within four miles from communities that possess a population density exceeding 250 people per square mile." Even the map in the Telegraph DEIS, Tri-County Fire Working Group Regional Community Wildfire Protection Plan (2005), indicates that the vast majority of this project area does not have human densities qualifying as WUI. **(20-1)** Based on current fire behavior literature, we disagree with the premise that large, landscape level treatment areas "should reduce hazardous fuels and reduce risks… [and] remove wildland fuels…" (DEIS Summary, V). We strongly encourage enlightened use of literature in the final EIS that addresses the fact that scientific evidence for fuel reductions ability to halt fires under extreme fire events is not usually possible -- and extreme fire events are the major target of these treatments. **(20-2)**	**(20-1)** The map in the DEIS on page 9, includes WUI information from both the Tri-County Fire Working Group Plan (2005) and the Powell County CWPP (2005). Maps have been updated in the FEIS and the Fire and Fuels report in hopes it better defines the source document for the WUIs. **(20-2)** As recommended, additional literature was reviewed in regards to efficacy of fuel reduction treatments. Analysis updated and included in the Fire and Fuels Specialist Report and included in FEIS. The desired strategy for initial attack on these forest types is "direct attack". In most cases, this suppression strategy is the safest and most effective tactic, resulting in the least area burned. Weather, topography, and fuel conditions influence fire behavior and may enable fires to escape initial attack, possibly requiring the use of indirect suppression tactics. Although general wildfire control efforts may not benefit from fuel treatments during extreme fire behavior, fuel modifications can significantly change outcome of a wildfire within a treatment area (Reinhardt et al 2008). Treatment units have been strategically located and designed to modify fire behavior and complement existing wildfire response

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	strategies and tactics within Telegraph Project area, including both direct and indirect attack.
Furthermore, the effectiveness of treatments **(20-3)** declines over time and this raises the issue of how likely is it for a fire to encounter a treated areas in the time when it "MIGHT" work. All of this is being done to protect homes built in the fire plain. And research has shown over and over, fuel reductions more than 200 feet from homes has no added benefit. We challenge the assumptions upon which this project is based: "Treatment is needed to…ensure wildlife habitat in the future,… and maintain and improve watershed values." In a scientific paper entitled Does wildfire likelihood increase following insect outbreaks in conifer forests? the "findings suggest that strategic plans should recognize (1) the relative rarity of insect-fire interactions and (2) the potential ecosystem restoration benefits of native insect outbreaks, when they do occur."1 In a popularized article explaining the study, the researchers indicate that "an analysis of wildfire extent in Oregon and Washington over the past 30 years shows very little difference in the likelihood of fires in forests with and without insect damage. Indeed, other factors – drought, storms, and fuel accumulation from years of fire suppression – may be more important than insects in determining if fire is more or less likely from year to year. Researchers discovered that the chances of fire in forests with extensive swaths of dead timber are neither higher nor lower than in forests without damage from mountain pine beetles. HHAA believe it is a disservice to publicly instill pyro-panic by not providing accurate information about factors that most likely contribute to fire, while offering "solutions" that may not be needed at all, but have the potential to increase the speed of any fire that might occur, by drying out the landscape, **(20-4)** and severely changing other resource values through these draconian measures, whether or NOT a fire occurs. More confounding than the proposed activity itself is the false pretenses that are perpetrated in an apparent effort to coerce the public into believing that diseased trees are unnatural and will certainly burst into flame. In fact, the above mentioned researchers postulated that "it is possible that insects are doing some 'fuel reduction' work that managers may not need to replicate." We wish to commend the Helena National Forest for bringing fire experts Mark Finney and Jack Cohen to Helena to discuss this most important issue. Many of our members attended this excellent forum. But we note that the Purpose of the Telegraph project runs counter to	**(20-3)** Both maintenance of treated units and treatment of new units are important to optimize treatment patterns over the landscape (Finney et al. 2005; Finney et al. 2006; Reinhardt et al. 2008; Omi and Martinson 2004). Treatments are effective for about 10 years as related to potential fire behavior (Finney et al. 2006b; Omi et al. 2007) and a rate of twenty percent treatment per decade has been found most effective (Finney et al. 2006b). Maintenance may be required to maintain resiliency to future disturbances once the desired conditions have been achieved. The need for maintenance treatments would be determined through resource monitoring. Monitoring may identify the need for additional analysis prior to maintenance treatment. **(20-4)** As recommended, additional literature was reviewed in regards to efficacy of fuel reduction treatments and insect infestations. The Fire and Fuels report and the FEIS has been updated to incorporate additional details regarding fire behavior as a result of the implementation of this decision.

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what was explained in their presentation as recorded in the June 17, 2015 Independent Record: -- Mark Finney, Ph.D., **(20-5)** a research forester for the Missoula Fire Sciences Laboratory explained:	**(20-5)** Several publications by Dr. Mark Finney as well as personal communication were reviewed and incorporated into the Fire and Fuels Specialist Report and FEIS. In addition, we have added prescribed fire activities designed to modify fire behavior following harvest which was analyzed with Alternative 4. Please see Comment 20-2.
The large wildfires becoming more frequent in the West are a product of conventional fire management policies, said Mark Finney, Ph.D., a research forester with the U.S. Forest Service Fire Lab in Missoula. “It’s a consequence of our exclusion of fire for the last 100 or more years,” he said from his office in Missoula. “We’ve been so effective at removing fire, we’re now seeing fires burning to the worst case and getting very large fires. If we accept that premise, then we have to manage and introduce fire under our prescription that doesn’t consume all the fuel on site.” Finney presented his research on fire behavior in landscapes of varying levels of logging and prescribed burning at last week’s “Fire on the Landscape” lecture series in Helena. While logging or thinning is often touted as a means to mitigate fire, he has found it does little to stop a wildfire. Only prescribed fire, set under more moderate conditions, has been proven to impact large fires burning under extreme conditions. “There’s a confusion that if you do timber management you’re doing fuel management -- you’re not,” Finney said. “We’re not going to cut our way out of the problem, but there are ways to do this strategically, get the benefits and have a sustainable fire management approach.” Finney found that fire “ripped through logged areas,” and only units where prescribed fire was introduced showed effectiveness in stopping or mitigating wildfire spread. “This isn’t saying that timber harvesting is bad or good, it’s just that it doesn’t substitute for the change in fuel structure under prescribed burning,” he said. Jack Cohen, a research physical scientist for the Missoula Fire Sciences Laboratory, focused his talk on fire behavior in the wildland-urban interface and how homes burn. Wildfire is inevitable, but houses burning down are not.	

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The important knowledge for homeowners is how those embers ignite structures and how those structures can survive, Cohen said. "I'd like to suggest that the home ignition problem isn't a wildfire control problem, so let's start focusing on where we can be effective," he said. HHAA appreciates this common sense approach to wildfire. Yes, fire is scary, but we need not create hysteria when facts can help people understand the problem and take appropriate action. The Telegraph DEIS unfortunately plays to these instilled fears. It could have been a vehicle for education and objective analysis of what a landscape functioning to provide ecosystems services looks like.	
<u>NEPA and NFMA Compliance</u> With respect to meeting Forest Plan standards, this project is falling short. As hunters who are intimately familiar with the ways of wildlife and this landscape, we take particular umbrage with the statement that wildlife will not use an area if it has dead and down trees. **(20-6)** In fact elk seek out such circumstances out for security when opened up and/or roaded areas have compromised secure habitat elsewhere. Helena Hunters and Anglers Association has objected to the proposed Helena Forest Plan amendment to the Big Game Security Standard. We reference in its entirety, that Objection document here2, to explain our concern with application of this, as yet unimplemented amendment as it would not provide important big game security in the Telegraph Project. Rather with past cover removal activities, this project severely reduces essential security cover. **(20-7)** And WHY -- when the project area occurs miles from the accepted definition of Urban Interface? Although the main body of the document (pg 43) states that all standards will be met, in fact, the project would be exempted from all of the following standards (DEIS Appx B): • Big Game Standard 1 for thermal cover, • Big Game Standard 3 for thermal cover, • Big Game Standard 6.1. for security during logging operations. • Big Game Standard 6.2. for redistribution of elk that HHAA believe would be exacerbated by this logging project, particularly with respect to reduced cover • Big Game Standard 6.7. clear-cut opening must be less than 100 acres, but this project would violate that standard • Big Game Standard 6.11. Logging near winter range is to be scheduled outside of the winter period, but an exemption would be issued.	**(20-6)** Consistency with Forest Plan wildlife (big game) standards is described in Appendix B of the FEIS. See also the Rocky Mountain Elk, *Conclusions* section in the FEIS. It's unclear where the statement that wildlife will not use an area if it has dead and down trees is in the FEIS. See for example the Rocky Mountain Elk, *Local Summer Habitat Components and Calving Areas* in the Environmental Consequences in the FEIS. See also the Wetland Habitats and Riparian Zones, Alternative 1, Direct and Indirect Effects section: *"[t]he downed trees would provide a certain degree of structural complexity useful to small mammals, amphibians, and some birds, and if substantial enough, larger mammals (concealment for bedded animals, for example)".* See also the American Marten, Marten Habitat section in the FEIS: *"[t]he "jackstraw" piling up of dead trees (≥ 6 inches dbh) would provide much more complex near-ground cover for resting, breeding, and foraging than would the "clean" understories provided by most mature lodgepole pine stands"*. **(20-7)** The *Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area* was signed on March 2, 2016 and the amended standard described in that decision replaces standard 4a analyzed in the Telegraph DEIS. The FEIS analysis is updated to reflect the amended standard (see the Rocky Mountain Elk section, *Elk Security during the Hunting Season).* Currently, hiding cover comprises 73% and 65% of the Jericho and Spotted Dog – Little Blackfoot herd units, respectively. This is above the 50% minimum threshold required by big game standard 3 (Helena NF Forest Plan, USDA, 1986, pp. IV/17-18) despite the past activities articulated in the Rocky Mountain Elk section, Cumulative Effects, Past Activities: *"[p]ast Forest Service timber harvest has resulted in the treatment of 1,479 acres of forested stands in the Jericho herd unit and 5,591 acres in the Spotted Dog – Little Blackfoot herd unit. Several hundred acres on private land have also been harvested since the*

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• Big Game Standard 4a may not be being met in one of the elk herd units The following is taken directly from the DEIS Appendix B. **Big Game Standard - 1.** On important summer and winter range, adequate thermal and hiding cover will be maintained to support the habitat potential. Thermal cover will be removed on elk winter range in order to meet the purpose and need of the project. A site- specific exemption to the standard would be required for either action alternative.	*1980s (Table 16). Additionally, the Forestwide Hazardous Tree Removal and Fuels Reduction Project has resulted in the removal of 350 acres of hiding cover and 11 acres of thermal cover in the Jericho herd unit and 563 acres in the Spotted Dog – Little Blackfoot herd unit. Today, these treatments are reflected in the existing condition which is currently at Forest Plan standards in both herd units for hiding cover and below the Forest Plan standard for thermal cover".*
Big Game Standard - 3. Subject to hydrologic and other resource constraints, elk summer range will be maintained at 35 percent or greater hiding cover and areas of winter range will be maintained at 25 percent or greater thermal cover in drainages or elk herd units. Big game Standard 3 (HFP, p. II/17) requires that hiding cover on elk summer range be maintained at or above 35% (or, on in this case, 50% using the MFWP crown closure criterion). Hiding cover must be in blocks of at least 40 acres to be tallied as Forest Plan hiding cover. Both action alternatives would result in the reduction of hiding cover but not to the extent that the Jericho and Spotted dog – Little Blackfoot herd units would fall out of compliance. Standard 3 also requires that thermal cover on winter range be maintained at or about 25% in blocks of at least 15 acres. Under Alternative 1, the Jericho herd unit fails to meet the thermal portion of this standard. Alternatives 2 and 3 would further reduce thermal cover on winter range. A site-specific exemption to the standard would be required for either action alternative. **Big Game Standard 6.1.** Security during logging operations – The action alternatives are consistent with this recommendation. Design elements have been incorporated that confine logging to a single drainage at a time to Openings would be generally less than 100 acres. However, in order to meet the purpose and need for the project, some treatment units are greater than 100 acres. This is to address the mortality in lodgepole pine stands associated with the mountain pine beetle. A site-specific amendment would be needed for either action alternative. Big Game Standard 6.2. Redistribution of elk – The action alternatives are consistent with this recommendation which requires that timber sales be planned in a manner that does not redistribute elk onto adjacent or nearby property. Management challenges associated with HD 215 do include redistribution of elk to private land (MFWP 2005, pp. 190-193). The redistribution of elk that is currently occurring in HD 215 would not be exacerbated by the action alternatives. Big Game Standard 6.11. Winter range – This recommendation states that timbered areas adjacent to primary winter foraging areas should be managed to maintain the integrity of cover and timber harvest should be scheduled outside of the winter period. There are some treatment units within which winter logging in winter range is proposed under both action alternatives.	

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Implementation therefore would require a site-specific amendment to allow the project to proceed. The DEIS justifies deviation from these standards by stating: "Despite this amendment and its anticipated impacts to elk, elk populations within the project area and across the Forest as a whole should continue to remain robust." (B-9)	
However, the fact that elk populations cannot be controlled due to declining security and hiding cover on public land management is the issue **(20-8)**. It is elk displacement and thus private land game damage that is at stake when security is compromised compelling public wildlife to leave public lands for more secure private lands. This has become a huge issue across the state of Montana resulting in growing elk herds that can no longer be managed on public lands through public hunting. Such flagrant distain for big game standards leads to public hunting opportunity being lost, recreational revenue declines, financial burdens to private landowners, and contributes to dwindling hunter recruitment for lack of places to hunt. In all action alternatives, hiding cover during both summer and fall would be reduced (DEIS 51-52). In analysis of the Divide Travel Plan 2 of the 6 EHUs do not meet the minimum standard for security. This project would reduce security in 2 of the 6 units that are still meeting the minimum. Under "Methodologies and Scientific Accuracy" (DEIS 242) the following definition of big game security is presented, which is NOT the Forest Plan Standard 4a for big game security: "Elk security is analyzed according to the following: Security is defined as a proportion of an elk herd unit within the administrative boundary of the Helena Ranger District that consists of an area of at least 1000 acres in size that is at least ½ mile from a motorized route open to the public between 9/1 and 12/1. Security blocks are adjusted for constrictions less than or equal to ½ mile in width. Security is calculated across all ownerships within the administrative boundary. Intermittent Refuge Areas are defined as those areas at least 250 acres in size and less than 1000 acres in size that are greater than or equal to ½ mile from a motorized route open to the public between 9/1 and 12/1. Intermittent Refuge Areas are adjusted for constrictions less than or equal to ½ mile in width. Intermittent Refuge Areas are calculated across all ownerships within the administrative boundary." So while the DEIS states that Forest Plan Standard 4a is being met, in fact a completely different approach is being used than in the standard, one that the Helena National Forest has not yet implemented. The DEIS (276) confirms that the project was not fully analyzed for big game security standard 4a:	**(20-8)** The Telegraph Project area falls entirely within a single elk hunting district: HD 215, which lies west of the Continental Divide and south of U.S. Highway 12. The Project area's eastern border, however, abuts a second district—HD 335, which lies east of the Divide and south of Highway 12 (see *Montana FWP Population Management: Hunting Districts* section in the FEIS). The wildlife analysis in the FEIS explains that elk management is more complicated than describing sheer numbers alone and that several of the challenges faced by elk managers in HD 215 center on access and elk movement onto private land which could be a result of hunting pressure on public land and associated security implications. For example: *"[t]he population is well above the objective of 1,120 – 1,680 elk in this district. The bull/cow ratio, on the other hand, while still above MFWP objectives, has not improved. Beyond that, the percentage of mature bulls in the population has decreased in recent years… This is an indication of hunting pressure too heavy for the available security on fall range."* And, *"[u]ntil recently, elk moving off the Forest to the west had been able to settle in a large block of private ranchland in the Spotted Dog country, which had been off-limits to public hunting. Elk began moving to this winter range area as early as the start of the bow season in September. The move may be a direct response to pressure from bow hunters and motorized recreation on the Forest, but it may also reflect an established pattern of migration down to secure and benign valley habitat regardless of other circumstances. MFWP felt that the refuge provided by this private land suppressed hunting opportunity and allowed the elk population to maintain itself well in excess of Montana Elk Management Plan objectives…"* (See *Montana FWP Population Management: Hunting Districts, Hunting District 215* section in the FEIS.) Hiding cover, however, as mentioned in 20-7, is currently above Forest Plan thresholds and although there are declines associated with the mountain pine beetle tree mortality, the action alternatives would not result in thresholds dropping below big game standard 3 for hiding cover (see *Regulatory Framework and Forest Plan Consistency, Compliance with Big Game Standard 3 – Hiding Cover on*

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"Hiding Cover in the Project Area – Open road density and percent hiding cover in the project area have not been calculated at the project level" "The Spotted Dog – Little Blackfoot EHU affords excellent security for elk through as much of the hunting season as snow conditions allow. The largest block of security is associated with the Electric Peak Roadless Area in the southern half of the unit. Most problems with elk security involve lower elevation security habitat that comes into play after elk have been forced out of higher elevation roadless areas by snow and deteriorating forage later in the hunting season. Cover and road density is at issue in the Negro Mountain, Treasure Mountain, lower Telegraph Creek, and Spotted Dog Creek areas." (DEIS 259)	*Summer Range and Thermal Cover on Winter Range* in the FEIS).
Past EISs as recently as 2010 have indicated that the Spotted Dog EHU was separate from the Little Blackfoot EHU. The Spotted Dog EHU was not meeting Standard 4a in the Hazard Tree Project (see table below). Now this DEIS combines these two EHUs into one giant EHU (more than double the size of the next largest EHU) and states that the EHU now does meet Standard 4a. Please explain this discrepancy**. (20-9)** It certainly appears as though combining of EHUs was done for the Telegraph project in order to be able to state that the project meets the standard for big game security. But for the Spotted Dog EHU, it far below meeting standard 4a, and for the Jericho EHU it is highly questionable based on Figure 56 of the DEIS (275) which uses a much higher "% Hiding Cover" figure (73%) than what was used in the Divide FEIS for Jericho (65%) or any previous EIS. Under Forest Plan standard 4a, security percentages are in fact determined by the amount of hiding cover in an elk herd unit. The standard's language does not use the term "security areas". The DEIS has gone out of its way to intermingle the existing Forest Plan standard which should govern this project for big game security, with a proposed amendment that has not been endorsed, let alone put into effect.**(20-10)** The following discussion from the DEIS reinforces the use of a non-sanctioned security amendment rather than use of the existing big game security standard**:(20-11)** **"Elk Security during Hunting Season** Timber harvest and prescribed fire in the action alternatives would remove conifers from stands that are currently providing elk hiding cover. This would potentially increase forage but would reduce tree density that currently provides hiding cover. Maintaining hiding cover in the project area is important to maintain big game habitat capability and hunting opportunity. The action alternatives propose timber harvest and prescribed fire within existing elk security areas and intermittent refuge areas. Timber harvest or prescribed fire should not reduce the effectiveness of security areas given the distance of these areas from open roads, the irregularity of the terrain, and the value of additional fall forage within	**(20-9)** The Divide landscape has been divided into 6 elk herd units (EHUs)—delineated in 2003 by Helena NF and MFWP biologists (and modified in 2007, 2008, and 2011). These modifications included (1) the addition of the 1.5 mile zone beyond the Forest boundary to better represent the influence of Forest management on wintering elk and (2) the merging of the Spotted Dog and Little Blackfoot herd units into a single unit to better reflect how elk groups intermingle in that area in summer and fall (see *Local Elk Management Units, Helena NF Habitat Management: Elk Herd Units* and *Spotted Dog – Little Blackfoot Elk Herd Unit* sections in the FEIS). **(20-10)** The *Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area* was signed on March 2, 2016 and the amended standard described in that decision replaces standard 4a analyzed in the Telegraph DEIS. The FEIS analysis is updated to reflect the amended standard (see the Rocky Mountain Elk section, *Elk Security during the Hunting Season).* The DEIS included both the original standard 4a analysis as well as a security analysis guided by the proposed amendment associated with the Divide Travel Plan. The Forest regularly conducts a security analysis for project work even though it hasn't been a standard; the Telegraph project continued that tradition and updated the security analysis to reflect the proposed (at the time of the DEIS) Divide Travel Plan amendment efforts since that definition reflected better, more refined information than that in the original definition. **(20-11)** A-Wildlife - The *Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area* was signed on March 2, 2016 and the amended standard described in that decision replaces standard 4a analyzed in the Telegraph DEIS. The FEIS analysis is updated to reflect the amended standard (see the Rocky Mountain Elk section, *Elk Security during the Hunting Season).* The amended standard has been developed in coordination with MFWP, an approach supported in Christensen et al (1993, p.5) that *"[i]t is essential that*

<table>
<tr><th>Letter 20: Stan Fraiser, HHAA
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<tr><td>security areas. Timber harvest and prescribed fire could reduce the effectiveness of the intermittent refuge areas due to their smaller size. However, removal of conifers would increase sightlines and diminish screening cover that is useful to animals during hunting season."

The above discussion uses terminology proposed in the big game security amendment that has not been adopted and is under formal Objection by HHAA.</td><td>cooperation and coordination with State biologists be used to formulate criteria" and Hillis et al. that "strict adherence to the guidelines should be avoided" [in reference to definition of security]. The FEIS includes the rationale behind the development of the amended standard (see Appendix D – Wildlife Appendices in the FEIS).</td></tr>
<tr><td>Table 130 table makes no sense.(20-12) Its title is "Percent of elk security areas and acres of hiding cover remaining in security areas within each elk herd unit by alternative" Yet its footnote says "*Security percentages do not change between alternatives post-project implementation since security is not determined by the amount of hiding cover in a security area." This statement only makes sense if it is referring to the proposed big game security amendment rather than the existing and applicable security standard 4a.

Table 130 Percent of elk security areas and acres of hiding cover remaining in security areas within each elk herd unit by alternative
<table>
<tr><th>Herd Unit</th><th>Alternative 1 (percent security/acres hiding cover)</th><th>Alternative 2 (percent security*/acres hiding cover)</th><th>Alternative 3 (percent security/acres hiding cover)</th></tr>
<tr><td>Jericho</td><td>12%/3,139</td><td>12%/2,821</td><td>12%/3,074</td></tr>
<tr><td>Spotted Dog – Little Blackfoot</td><td>0%/17,196</td><td>30%/16,770</td><td>30%/16,873</td></tr>
</table>
"*Security percentages do not change between alternatives post-project implementation since security is not determined by the amount of hiding cover in a security area.

Summer Hiding Cover – The Telegraph project would reduce summer hiding cover in the Jericho EHU and it is not clear whether Spotted Dog has been officially combined with Little Blackfoot EHU. But if so, cover would be reduced on the only 2 elk herd units that currently meet the Forest Plan standard.

It is important to note that with regeneration and proper management, hiding cover will return and should be encouraged and its recruitment anticipated. Therefore we take exception to the following statement:

"Over the next decade, most of this cover will pass away as beetle-killed pine trees, which dominate the area,</td><td>(20-12) This is similar to the discussion for 20-11, above. The DEIS included two analyses that measure elk vulnerability during the hunting season: the original standard 4a hiding cover/open road density (i.e. pp. IV/17-18 in the Helena NF Forest Plan, USDA 1986) and an elk security analysis approach (see Rocky Mountain Elk, Hiding Cover/Open Road Density Index, Analysis Approach and Elk Security Areas, Analysis Approach sections). For the DEIS, the original standard 4a was used to gauge consistency with the Forest Plan (see Regulatory Framework and Forest Plan Consistency section in the Rocky Mountain Elk section in the DEIS). For the FEIS, the amended standard 4a replaces the original standard 4a.</td></tr>
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come down. After 10 years, both herd units will support so little hiding cover that they may be unable to satisfy the requirements of standard 3. In essence, there is nothing that can be done to prevent inexorable natural processes from pushing the herd units out of compliance with the current Forest Plan hiding cover standard." (DEIS 288)	

The DEIS itself recognizes that cover will return, but there is no intent to plan for and encourage it: "Hiding cover—and compliance with the standard—will return slowly as regenerating conifers fill in over the next few decades."
 	
The fact is, Alternative 2 would result in the removal of 2,387 acres of hiding cover within the Jericho herd unit and 3,821 acres within the Spotted Dog – Little Blackfoot herd unit, while Alternative 3 would result in the removal of 1,356 acres of hiding cover within the Jericho herd unit and 2,348 acres within the Spotted Dog – Little Blackfoot herd unit.
 	
Where is the discussion to rehabilitate tree cover on the forest for both summer hiding cover and security hiding cover? **(20-13)** The DEIS contradicts itself when it says "It will be several decades before those forested stands dying from mountain pine beetle will be of a sufficient age to provide any canopy cover at all" then says, "The action alternatives would add to the area impacted by harvest, promoting rapid re-stocking." (emphasis added) (DEIS 113)
 	
Helena Hunters and Anglers Association has previously recommended to the Helena National Forest in their attempts to change the big game security standard, to take the following steps:
 	
• Implement Travel Plan Alternative 5 for the Divide Landscape
• Ultimately a beneficial and realistic standard for big game could be achieved
• Retain Forest Plan standard 4a for big game security until the following is accomplished to create a new standard under the pending HNF Plan:
  o Evaluate each Forest's landscapes' ability to meet its biological potential to produce vegetation capable of providing hiding cover;
  o Then, establish a minimum percentage of each area's biological potential to produce adequate security hiding cover;
  o Such hiding cover would be recruited over a reasonable time, and applied in conjunction with a prudently monitored and responsively managed transportation system.
• Ultimately a beneficial and realistic standard for big game could be achieved (Objection to amending Big Game Security Standard 4a for the Divide Travel Plan area, June 19, 2015)
	(20-13) All treatments described in Chapter 2 would promote rapid reforestation to provide for tree cover in the long term on some proportion of the landscape that generally favors fast growing seral species over slower growing shade tolerant species. In addition, all action alternatives include some amount of pre-commercial thinning has clear ties to vigor and sustainability; this treatment can be used to promote desired values such as mature habitat structure, watershed function, recreation, aesthetics and species diversity. Specific volume, growth, and stocking trends are assessed for each forest type analysis group. This analysis is include in the Forest Vegetation section of the FEIS.
	
	Information has also been added in the Elk Section of the Wildlife Report and included in the FEIS.

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Cumulative Forest Service actions The amount of timber harvest involved in this single project would equal (Alt 3 – 4185 acres) or exceed (Alt 2 – 5704 acres) the cumulative amount of timber harvest (4374 acres) ever conducted on this area since records have been kept (1960s). Is it any wonder that wildlife hiding cover is suffering? Cumulative impacts are "the impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." 40 C.F.R. § 1508.7. Cumulative impacts can result from "individually minor but collectively significant actions taking place over a period of time." Helena Forest Plan IV/2 states, "Within this guidance, projects are developed to most efficiently and effectively accomplish the management goals and objectives. All NEPA requirements will be complied with in all projects. This includes appropriate public participation in the development and the results of the analysis done on the projects." (emphasis added) Failure to address HNF actions, through honest cumulative effects analysis, has lead to expanding erosion of wildlife habitat and consequent inability to meet Forest Plan Standards, and now numerous exemptions to those standards in order to move ahead with the Telegraph Project.	
Vegetative cover and road proliferation has systematically depleted the landscape, largely through repeated "Finding of No Significant Impact" (FONSI), RODs, DNs and other decisions on Forest lands. Cover-loss impacts have accumulated over the 29-year life of the Helena National Forest Plan – a blind eye has been turned to wildlife needs, and in particular those of big game by the HNF for a long time. And this project does not change that approach. The percentage of the analysis area capable of producing forested cover is not disclosed in the DEIS, but should be, and the percentage of that area that is not currently providing cover should be displayed**.(20-14)** In the context of exempting the project from various big game security standards, the DEIS lists but does not fully reveal the cumulative loss of hiding cover, thermal cover, and security under Standard 4a. **(20-15)** It is important that the FEIS be based on relevant analytical factors that affect big game, and fully disclose cumulative impacts that have occurred on the ground. Fragmentation The Continental Divide in this portion of Montana constitutes the most fractured, fragmented link in the	**(20-14)** Wildlife – An analysis of the area capable of producing forested cover has been added to the FEIS in response to this comment. See Wildlife Appendix B in Appendix D – Wildlife Appendices in the FEIS. **(20-15)** A-Wildlife - Standard 4a (as stated in the Helena NF Forest Plan, USDA, 1986, pp. IV/17-18) and as amended, does not include a thermal cover consideration (see big game standard 3, USDA 1986, p. IV/17). The analysis in the Telegraph DEIS and FEIS describes the methodology for determining existing cover (which includes past activities): *"[a]ny stand that is less than 15 years old that has been treated with timber harvest or prescribed fire is not considered hiding cover"* (see *Table 1 Assumptions,*

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Divide corridor providing wildlife connectivity between the Northern Continental Divide Ecosystem and the Yellowstone Ecosystem. Yet this project would remove vast areas of vegetation along the divide in the form of timber harvest (3580 acres in Alt 2 to 5700 acres in Alt 3), in units that could be over 100 acres in size. In addition to timber sales, fragmentation of the critically important Electric Peak and Jericho Roadless Area is a concern. IRAs constitute extremely important big game security areas. The Hazard Tree project cleared miles of road along the Electric Peak IRA, even though HHAA submitted comments3 and filed an Objection4 requesting that this action not proceed until HNF Forest Travel Planning for Blackfoot and Divide was completed. The HHAA Objection was denied. The Hazard Tree decision was supposed to be based on Wildland Urban Interface (WUI) maps, and roads within those areas were to have received "treatment". However only 110.2 miles of road occurred in the WUI, and 380.8 miles of road did not. Nevertheless, all 491 miles of road were rubber stamped for "treatment" which involved tree removal along the road extending out 125'- 150', and grading and gravelling the surface in many cases. Many dead-end spur roads and road that were closing themselves due to lack of use and vegetation encroachment, were allowed to be reopened – all affecting, or potentially affecting, Forest Plan big game standards1, 3, 4 (a, b, c, g, h), and 5. That action allowed treatment (removal of dead and live timber and possible surface improvement) of more than 491 miles of road and created 9,415 acres of disturbance (Hazard Tree EA pg 23) across the HNF – substantially impacting big game summer range hiding cover, fall security, winter thermal cover, and other wildlife requirements. This project further denigrates habitat by exempting the project from several standards. Compliance with Forest Plan standards for summer hiding cover and big game security were exempted from the Hazard Tree project. "Forestwide Hazardous Tree Removal and Fuels Reduction Project have resulted in removal of 350 acres of hiding cover and 11 acres of thermal cover in the Jericho herd unit and 563 acres in the Spotted Dog – Little Blackfoot herd unit." (DEIS 297) And now, several wildlife standards are being exempted from this project as well, further compromising wildlife habitats. The HNF itself has violated its own Forest Plan Standards and will continue to do so unless non-discretionary Forest Plan Standards and mitigation measures designed to bring the site back into compliance with each standard, are implemented and enforced. Inconsistent application of Divide Travel Plan and associated Security Amendment The Final ROD on the Divide Travel Plan (DTP) has not been issued, so it appears that the Telegraph DEIS is	*information used, and methodologies used to determine effects to wildlife* in the *Assumptions, Information Used, and Methodologies/Scientific Accuracy* section). Also, the *Past Activities* section in *Cumulative Effects* for Rocky Mountain Elk also describe the effects – in terms of acres treated - of past activities to hiding cover today as does Wildlife Appendix E in Appendix D – Wildlife Appendices in the FEIS. See also the *Cumulative Effects Conclusions* in the Elk section.

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pre-decisional in its undeclared but subtle use of the big game security amendment that was attached to the Divide Travel Plan (DTP) that is currently under Objection, while at the same time declaring that EHUs are in compliance with the existing Standard 4a, when in fact only 1 of the 2 EHUs may be in compliance.	
It is inconsistent that the Telegraph DEIS would use the security amendment yet not address the Travel Plan to which it was attached. Since the amendment is being applied, the following comparison of inconsistencies with the Travel plan is offered. The Telegraph DEIS Alternative 2 Route Treatment map is, to a substantial degree, not in compliance with the DTP ROD. With respect to the Alternative 3 DEIS Route Treatment map, we find the following inconsistencies between it and the Draft Divide Travel Map ROD (4/2015): • Ontario Creek 4104-A1 is in conflict with Divide Draft ROD • 1863-A1 does not show up on the Divide Travel map ROD (4/15). In fact several small routes at the end of this road are in conflict with the DTP ROD. • 4100 is a trail open to less than 50", but that is not reflected on the DEIS map • 4100-B1, 1857-B1 do not occur on the DTP ROD • 1857-001 appears on the DEIS map, but on none of the DTP maps, nor does it appear in the final DTP ROD. • 227-A2 and 227-B1 along Hat Cr should be closed according to DTP ROD • 1856-D1 and 1856-D2 in Hahn Cr – why are these roads being maintained since they are closed to wheeled motorized use in the DTP ROD – is it for snowmobile use? • Existing CDNST does not appear on the DEIS map in sections 3 and 5 about 1 mile west of Jericho Mtn. It should since other portions of it show up as "Reconstruction" These inconsistencies with the DTP ROD should be corrected in the Telegraph FEIS if Alternative 3 is selected, and the Divide Travel Plan is implemented. **(20-16)** To improve the situation, Roads 1856, 1856-G1 and 1856-H1 should be reclaimed whether Vegetation Alt 2 or 3 is implemented**.(20-17)** Only then will the roadless character of the Jericho Mtn Roadless area be improved over and above current incursions stemming from these routes.	**(20-16)** The Divide Travel Plan Record of Decision was signed March 1, 2016. Forest Service Manual (FSM) 7700 Travel Management and 36 Code of Federal Regulations 212.51 (a) address administrative use with regard to travel regulations. Travel Management (FSM 7716.2) exempts the following from designations: 4.) Limited administrative use by the Forest Service. Administrative use of roads, trails and areas not designated for motor vehicle use should be limited to what is required for administration and protection of National Forest System lands. 8.) Motor vehicle use that is specifically authorized under a written authorization issued under federal law and regulations. Examples of written authorization include contracts, easements, and permits. The authorization must establish conditions for motor vehicle use, including the location of the use, by vehicle class and time of year. 4104-A1 is closed to wheeled motorized and open to over-snow and a designated snowmobile route. If used for implementation of the Telegraph vegetation project it should be put in a storage condition upon completion that restricts wheeled vehicle use while allowing for over-snow use, including grooming. 1863-A1 was on the Divide Travel Plan existing condition map. This route provides access to private property (as well as the Luttrell repository) and is open to wheeled motorized vehicles in the existing condition and in the final Divide Travel Plan record of decision. **(20-17)** Roads 1856, 1856-G1 and 1856-H1 are being analyzed in Alternative 3 and 4 and would be an available activity for the Responsible Official to include as part of the Record of Decision (ROD).

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The Existing Condition map of the DTP does not accurately show that 1856-H1 even exists in its parallel formation next to 1856 where it enters the Jericho Mtn IRA. It should have, and this project provides the means to correct that oversight. On the DTP Existing Condition map, 1864 (Bear Creek) is closed to motorized traffic. The DTP ROD map shows the route as "Existing Condition" but without the "closed to wheeled vehicle" status displayed. The Telegraph project can clarify this oversight by clearly closing this grown-in road to wheeled vehicle use since it is a serious intrusion into the Roadless Area**. (20-18)** As we noted in previous comment, Mother Nature is simply not making new roadless areas, so we strongly urge creation of large blocks of country where roads are removed so that wildlife has opportunities to exist far from a road. However, when HHAA made those comments in our scoping letter of December 14, 2009, we had no idea that the HNF would be attempting to amend the Big Game Security Standard to completely remove vegetation cover from the standard. We had asked: "Please clearly and in geographic detail, explain how big game security and cover will be protected throughout the project area, and particularly along the Continental Divide between Highway 12 and the Rimini Road. Forest Road 1856 is adjacent to the Roadless Area, and it appears that about two miles of temporary roads is being proposed to be constructed into the west side of the Roadless Area. Wolverine and lynx were identified to occur in this area as a result of DNA testing that was done on scats, and this area is one of the best big game security areas left in Telegraph Creek. How will these important values be maintained? How will temporary roads be reclaimed and how will OHV's be restricted from using the area? The Helena District, like most Montana National Forest lands, has a dismal record of enforcing motorized travel restrictions. How will the District assure temporary roads are not conduits for motorized travel as has occurred on so many areas on the Helena Forest? Please address all of these questions in your analysis. We expect that all Forest Plan standards will be met. If this expectation is not valid, we would like to participate in any effort to alter the existing standards and guidelines." Tangible solutions to these issues were not addressed in the DEIS. In fact it appears that existing standards for big game security were altered without public involvement, to accommodate this project**. (20-19**) The Divide Travel Plan Big Game Security Amendment has not yet been adopted as we submit these comments, and we were told at the Objection meeting for the Divide Travel Plan that the Final Record of Decision on both the Divide Travel Plan and the Big Game Security Amendment would not be issued until sometime late this fall or early winter. We question the legality of applying a still non-existent amendment to the Telegraph project, but not actually acknowledging its use in the DEIS. Terms	**(20-18)** We will evaluate this suggestion on the ground and consider adding the recommended change in route status to the ROD. Currently, 1856-H1 is being analyzed in Alternative 3 and 4 to be fully decommissioned when activities associated with project implementation are complete. In addition, 1854 is currently being analyzed in the Tenmile-South Helena Project to be decommissioned in both action alternatives in the DEIS. **(20-19)** Existing standards for big game security were not altered in the Telegraph DEIS. As described in 20-10, above, the DEIS included both the original standard 4a analysis as well as a security analysis guided by the proposed amendment associated with the Divide Travel Plan. The Forest regularly conducts a security analysis for project work even though it hasn't been a standard; the Telegraph project continued that tradition and updated the security analysis to reflect the proposed (at the time of the

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such as “security areas”, “intermittent refuge areas”, and “screening cover” do not exist in the current security standard, but were used throughout the DEIS. A decision regarding a proposed security amendment has not yet been made and the process must allowed to unfold before a security standard can be replaced.	DEIS) Divide Travel Plan amendment efforts since that definition reflected better, more refined information than that in the original definition.
Ensuring the viability of MIS. Under NFMA, the implementing regulations, and the Helena Forest Plan, the Forest Service is required to manage wildlife habitat on the Helena National Forest to ensure viable populations of existing native species are maintained. To do so, the Forest Service identified management indicator species (MIS) for various species groups within the Helena National Forest whose habitat is most likely to be changed by forest management activities. MIS represent a proxy or surrogate for the health and viability of many other species. While the Forest Service retains some flexibility with respect to the appropriate methodology used to monitor population numbers (actual and trend) of MIS, i.e., using population data on MIS and/or habitat data as a proxy for MIS population data (commonly referred to as the “proxy-on-proxy” approach) the mandate to maintain viable populations of MIS like elk, mule deer, marten, grizzlies and woodpeckers, cannot be ignored. And the methodology employed must be reasonably reliable and accurate**. (20-20)** Native Ecosystems Council v. Tidwell, 599 F. 3d 926, 933 (9th Cir. 2010). If, for example, the Forest Service decides to use habitat as a proxy for population numbers for MIS, then the proxy results must mirror reality. Maintaining the acreage of habitat necessary to maintain viable populations of big game species (elk, deer, and moose) on the Helena National Forest must in fact ensure viable populations are maintained. At the very least, the Forest Service must describe the quantity and quality of habitat that is necessary to sustain the viability of big game species and explain its methodology for measuring this habitat. Native Ecosystems **(20-21)** Council v. Weldon, 848 F. Supp.2d 1207, 1213 (D. Mont. 2012). In the Helena National Forest, the Forest Service uses the big game standards, including Standard #4a, as a means of ensuring compliance with NFMA’s viability requirement. Compliance with Standard #4a’s hiding cover and road-density standard, for instance, is used as a proxy for population numbers and composition of elk and, as such, other big game species. The DEIS, however, is subtly eliminating standard #4a and replacing it with an untested standard based solely on size and distance from an open route during the hunting season. Hiding cover for big game and other forest dependent species was eliminated from the big game standard under the Divide Travel Plan. Because it is untested and eliminates the standard for hiding cover	**(20-20)** Wildlife Appendix D – Viability Analysis - in Appendix D – Wildlife Appendices in the FEIS describes the science and methodology used to determine viability of select species in the project area. Also, the *Assumptions, Information Used, and Methodologies/Scientific Accuracy* section describes species habitat associations and the limitation of habitat models. The *R1-VMap and FIA Intensified Grid Data* section refers to the accuracy of the data used to map wildlife habitat. **(20-21)** The methodology for measuring big game (elk) habitat is described in *Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife* in the *Assumptions, Information Used, and Methodologies/Scientific Accuracy* section and in Wildlife Appendix B – Telegraph Project Hiding Cover Methodology and Field Validation - in Appendix D – Wildlife Appendices in the FEIS. A discussion of the correlation between quantity/quality of habitat and viable populations of elk has been added to the FEIS to address this comment (see *Forest Plan Elk Population Goals* section).

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and road- density, there are no assurances that the new standard will work. Indeed, under the proposed amendment, a 1,000 clear cut would qualify as "big game security" so long as it is a half mile from a motorized route open during the hunting season. Subtle use of an unauthorized standard amendment as a proxy for monitoring populations (actual and trend) of MIS like elk and deer, therefore, is a violation of NFMA, the implementing regulations, and the Forest Plan.	
Threatened and Endangered Species "The project area is not in lynx critical habitat." (DEIS 244). We contend that any habitat that is used by lynx, especially consistently used, IS Lynx Habitat. **(20-22)** And lynx have consistently been located south of Highway 12, including trails, feeding, and bedding sites. Although numerous reports of grizzly bears (MFWP, Jamie Jonkel), and local testimonials regarding the presence of grizzly bears have been made (Divide Travel Plan Objection meeting August 19, 2015, Fred Bailey, Elliston resident), the DEIS states that there is no need to consider T&E species Standards 2, 3, and 4 for grizzly bears. However, we believe that every effort should be made to enhance and encourage usage and linkage between the NCDE and the Yellowstone Ecosystem through this tattered **(20-23)** portion of the Continental Divide that needs careful wildlife management. Enforcement The DEIS states that Enforcement issues are outside the range of this project (DEIS B28). This statement, repeatedly made over decades has lead to lawlessness across the HNF. The only acknowledgement of enforcement states that it will be shared with MFWP, who has no authority or capability to enforce travel management outside of the hunting season. The DEIS states that weekend patrols, signs and some road obliteration will occur. Weekend patrols are not good enough. We have come to the conclusion that because of the apparent inability of the Forest to enforce travel restrictions, that all temporary roads should be re-contoured and preempted from use by placing abundant large woody debris on the re-contoured road prism. We request that funds be provided through this project to assure all mitigation and compensation features are implemented. Funds should not be dependent on some future appropriation. **(20-24)** We note that several roads into this area were previously closed yearlong, but management was seriously lacking and violations were numerous. Physical design of this proposed project can minimize such problems in the future. We appreciate this opportunity to comment on the Telegraph Vegetation Project DEIS. Sincerely, Stan Frasier, President	**(20-22)** The wildlife analysis in the DEIS and FEIS identifies that lynx and their habitat are present in the project area while critical habitat is identified just to the north of the project area. As such, effects to lynx and their habitat are fully analyzed in the DEIS and FEIS. See the Canada Lynx section especially the *Critical Lynx Habitat* section for clarification on the extent of critical habitat relative to the Telegraph project. **(20-23)** T&E standards 2 and 3 are specifically applicable to areas well outside of the Telegraph project area. Standard 2 (Helena NF Forest Plan, USDA, 1986, p. II/19) applies to 'management situation' 1 and 2 which is identified in Appendix D (p. D/4) of the Forest Plan solely on the Lincoln Ranger District to the north. Standard 3 (also on p. II/19) applies to 'occupied' habitat which is also clearly identified as unique to the Lincoln Ranger District (p. D/3). Standard 4 (p. II/20) does not specific a geographic area of intent; therefore, the Forest Plan consistency sections in the FEIS have been updated to reflect that (see the Grizzly Bear, *Regulatory Framework and Forest Plan Consistency* section, and *Appendix B Forestwide Standards, Forest Plan Consistency, and Management Area Direction* in the FEIS). **(20-24)** Disposition of temporary roads and roads to be decommissioned is the same for all action alternatives and described in design features in Chapter 2. As requested, all decommissioning refers to full obliteration of the road re-contouring where the road cuts into a slope, ripping flat terrain and seeding/surface stabilization following these activities.

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1 Garrett W. Meigs, John L. Campbell, Harold S. J. Zald, John D. Bailey, David C. Shaw, and Robert E. Kennedy 2015. Does wildfire likelihood increase following insect outbreaks in conifer forests? Ecosphere 6:art118. http://dx.doi.org/10.1890/ES15- 00037.1 2 Helena Hunters and Anglers Association. June 19, 2015. Obejction to Programmatic Plan Amdnement for Big Game Security Forest Plan Standard 4a, Divide Travel Plan, Helena Ranger District, Helena National Forest. 3 Helena Hunters and Anglers Association. September 24, 2010. Hazardous Tree Project Summary of Roads to be Treated. 4 Helena Hunters and Anglers Association. April 23, 2010. Objection to Forest-Wide Hazardous Tree Removal and Fuels Reduction Project on the Helena National Forest (Includes Helena Forest Plan Amendment to Forest Plan Standards 3 an	The decommissioning of temporary roads will be completed by the contractor who builds them.

Letter 21: Mary Johnson **Comments**	**Response to Comments**
As a landowner whose 200-acre property is contiguous with the Helena National Forest (HNF), I am writing in support of the Telegraph Vegetation Project. Our family has known about this proposed project for several years and we are glad it may finally become a reality. My husband and I completed a Forest Stewardship Plan for our land many years ago. In 2005-6 we thinned, as good practice, our forested land that abuts the HNF on our east side. I have also completed many courses in the Master Forest Steward Program. I try to be a good steward of the land, and carry that interest forward by volunteering for the Montana Discovery Foundation—acting as a Board member, helping with wildflower walks and other programs at the Charter Oak Mine, on Mt. Helena, etc. Our family enjoys the Helena National Forest by riding our horses and hiking with friends, viewing wildlife (particularly elk, deer, moose) in the evening, studying plant life (I am an active member of the Montana Native Plant Society), and driving our old Polaris Ranger on the back roads. Our property has a couple of water rights at the edge of the HNF, so we are able to irrigate some of our pastureland during the early summer months. My concerns about our proximity to the HNF since the pine beetle outbreak have been three-fold: 1) The threat of wildfire to our property,(**21-1)** 2) The worry about dead trees falling while we are hiking and riding**,(21-2)** 3) The noxious weeds rampant near our border. The Telegraph Creek Vegetation Project will address the first two issues, and I am very grateful**.(21-3)** I am very glad this project has taken the welfare of wildlife into much consideration. The abundant animals make this place very special. (I majored in zoology in college; a healthy environment for the animals is very important to me.) Again, I support the Telegraph Vegetation Project. Alternative 2 would be my first choice. Thank you. Mary I Johnson 3386 (and 3544) Little Blackfoot River Road Elliston, MT 59728 Cc: Heather DeGeest	**(21-1)** As stated in the executive summary of the Fire and Fuels Specialist Report, the Telegraph Vegetation Project is designed to be responsive to fuel build up from dead trees resulting from the mountain pine beetle (MPB) outbreak and improve conditions for fire suppression effectiveness as well as firefighter and public safety in the area in the event of a wildfire. Additionally, new treatment units were added to further enhance existing fire suppression strategies, locating treatments contiguous to existing treatments and/or natural fuel breaks. These areas connecting proposed harvest units would strengthen the long term fire suppression strategies for this portion of the Divide Landscape. **(21-2)** While proposed treatment units and past roadside hazard removal would/have ameliorated some of the risk from falling trees, there will still be a large portion of the area untreated where trees will continue to fall for another decade or so, since it is impractical to treat every acre. **(21-3)** While the HNF weed program does continue to treat weeds across the Forest, it is likely that the proposed activities in the Telegraph project area would bring a focus on weed treatments in this area. High priority infestations would likely be treated first.

Letter 22: Sarah Jane Johnson, NEC Comments	Response to Comments
Native Ecosystems Council (NEC) and the Alliance for the Wild Rockies (AWR) would like to provide the following comments on the draft environmental impact statement (DEIS) for the proposed Telegraph Vegetation Project on the Helena Ranger District of the Helena National Forest. **Purpose and Need** There is no connection made between the purpose and need of the project and the severe impacts it will have on wildlife, including the threatened Canada lynx (lynx) and threatened grizzly bear. **(22-1)**	**(22-1)** Chapter 1 of the FEIS articulates the purpose and need for the project as (1) resiliency, diversity, and reforestation; (2) hazardous fuels reduction; (3) provide wood products for local economies; and (4) maintain and improve watershed values. The wildlife analyses in the FEIS describe the connection between project activities and short and long term habitat effects for wildlife in the project area including lynx and grizzly bears. Throughout the analyses, reference is made to project outcomes that would improve the ability of the project area to become more resilient to disturbances and that would promote species and age class diversity of vegetation (and in turn wildlife habitat) in the project area. For example, the lynx analysis concludes that "[t]imber harvest and prescribed fire in the short term would remove conifers that may provide screening cover that facilitates travel. In the long term, harvest and burning treatments will result in patterns of habitat that are desirable to lynx – i.e. early successional habitats that provide year-round snowshoe hare habitat interspersed with older multistory stands" (see Canada Lynx, Effects Common to All Action Alternatives and Conclusions sections for examples). The Grizzly Bear analysis describes that the "action alternatives would create patches and patterns that to some extent emulate natural fire which has been excluded from this ecosystem for a century. The restoration of fire adapted ecosystems does not involve simply the maintenance of open, late seral stands, but also promoting a mosaic of conditions on the landscape on all forest types. Proposed treatments would promote resilience to disturbances by creating a mosaic of conditions in densities, species composition, and age class that differ from untreated areas that would help ensure that not all forests are equally susceptible to the same disturbances at the same time" (see the Effects Common to All Action Alternatives section for example). These conclusions reached in the wildlife analyses are predicated on the analyses in the Forested Vegetation section in the FEIS.
The claims that clearcutting is needed on infested lodgepole pine forests to prevent forest fires is not supported by any current research, as well.**(22-2)**	**(22-2)** As a result of analysis, a determination has been made that even-aged harvesting systems are appropriate to meet the objectives and requirements of the Forest Plan. Regeneration harvesting utilizing clearcutting has been determined to be the optimum method in many areas due to the existing condition and forest type. The stands to be harvested with regeneration systems are dominated by dead lodgepole pine recently killed by MPB. There are insufficient live trees to offer silvicultural system options with regard to residual trees. Further, lodgepole pine ecology dictates that even-aged management best mimics the natural stand-replacing regimes of this species. In addition, as stated in the executive summary of the Fire and Fuels Specialist Report, the Telegraph Vegetation Project is not designed to prevent wildfires, it is designed to be responsive to fuel build up from dead trees resulting from the mountain pine beetle

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	(MPB) outbreak and improve conditions for fire suppression effectiveness as well as firefighter and public safety in the area in the event of a wildfire.
The purpose and need should state that the project is needed to subsidize the local timber industry.**(22-3)** Otherwise, why are so many exemptions/amendments required **(22-4)** for the Forest Plan, which is supposed to be the guiding document for the Helena National Forest.	**(22-3)** The purpose and need for this project includes providing wood products for local economies. This proposal is intended to utilize dead and dying material to provide forest products to the local timber industry, contributing to short term forest products and providing for long term sustainability of timber on the National Forest. This is consistent with management direction from the Helena National Forest Plan. **(22-4)** The Rocky Mountain Elk section in the FEIS identifies those standards for which an exemption would be needed in order to implement the project. These are standard 3 (thermal cover), standard 4c (logging during the winter in winter range), standard 6 (#7 and #11 – openings associated with clearcutting and activities on winter range during the winter) (see the Regulatory Framework and Forest Plan Consistency section). The Forest Plan allows for site-specific project level exemptions: "[i]f it is determined during project design that the best way to meet the management area goals of the Forest Plan conflicts with a Forest Plan standard, the Forest Supervisor may approve an exception to that standard for that project…" (USDA 1986, p. II/14). A majority of the project area (74%) is in Management Area T-1 for which the goals include "provide healthy timber stands and optimize growing potential over the planning horizon" (Ibid, p. III/30).
Snags The DEIS states that snags will be left in intermediate thinning units "as available." So how do you know what the snag retention will be? **(22-5)** Please be more specific about how snag recruitment will occur in regeneration harvest units and intermediate thinning units to maintain 2 snags per acre **(22-6)**, to meet the Forest Plan. How will 2 snags per acre be maintained in regeneration harvest units? If these is unknown, then just indicate that these areas will not have snag management as per the Forest Plan. **(22-7)**	**(22-5)** Since it is not known how many snags will be available in a given unit, and how many can be retained per OSHA requirements, to provide a conservative estimate treatment units were assumed to have no snags left. Design Features listed in the FEIS specify that: "If a snag designated for retention must be removed for safety (OSHA), it would remain onsite as coarse woody debris and a substitute snag selected for retention." **(22-6)** This information is documented in the Forested Habitats of Special Concern – Snag section and updated for the FEIS. It can also be found in Appendix B the Forest Plan Consistency Table. **(22-7)** To provide a conservative estimate for analysis, treatment units were assumed to have no snags left. The Forest plan does not require 2 snags on every acre, but averaged over 3rd order drainages. See Forest Vegetation section in the FEIS.
Please clarify how snag management is expected to maintain wildlife on treated acres. **(22-8)**	**(22-8)** The Snag and Woody Debris section of the wildlife analysis in the DEIS and FEIS describes how snag management would maintain wildlife habitat on treated acres as follows: "Under the action alternatives,

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	snags would be managed through the design of un-treated areas, retention of live trees for recruitment in treated areas, and setting snag retention goals in treated areas. In harvest units, contractors are required to fall any tree they identify as a safety hazard (OSHA Instruction CPL 2-1.19). However, retention goals would be included in prescriptions; if a snag designated for retention must be removed for safety, it would remain onsite as coarse woody debris and a substitute snag selected for retention… In regeneration harvest units, roughly 20 snags per 10 acres from a mixture of diameter classes available, with seral species preferred, and all snags >20" dbh would be retained. In intermediate harvest units, the goal would be to retain all snags greater than 20" dbh; and additional snags to average at least 2/acre of the largest and most windfirm snags available, or as many are available less than that. There would also be abundant live trees in various size classes retained for snag replacement as well as inoperable areas and buffers in units where snags would be retained" (see the Effects Common to All Action Alternatives section). See also the American Marten, Pileated Woodpecker, and Hairy Woodpecker Conclusions sections.
Past logging has occurred on about 4349 acres. This is at a minimum, 18% of the 23,699 project area. Alternative 2 will increase this snag void up to 35% of the landscape. Please define the science that indicates that snag- associated wildlife will not be significantly reduced at this reduction in snag forested habitat. **(22-9)**	**(22-9)** The analyses for those wildlife species that are associated with snags include reference to the science behind recommended snag levels for those species and if the action alternatives – and the existing condition for that matter (see the Pileated Woodpecker, Project Area Habitat and Populations, Habitat section for example) - are compatible with that science. See also for example the American Marten, Pileated Woodpecker, and Hairy Woodpecker Conclusions sections.
The DEIS at 397 notes that most proposed harvest will occur along existing roads. This indicates that harvest impacts will be concentrated, leaving remaining suitable habitat for wildlife heavily fragmented in the best habitats.**(22-10)**	**(22-10)** The Habitat Fragmentation analysis in the DEIS and FEIS provides context on the nature of fragmentation relative to existing conditions in the project area. That analysis describes the Telegraph Project area as "a typical example of how timber harvest has modified forest habitat in the landscape. Between 1960 and 2014, approximately 16% of the Project area was logged via regeneration harvest methods, creating new openings totaling about 3,779 acres in the mature forest continuum. Nearly 95% of these cutting units are less than 40 acres in size and 50% of them are less than 15 acres. Because all but about 50 acres were harvested prior to 1990, they are now occupied by stands of sapling conifers (with the younger stands not far beyond seedling stage and the older stands moving into pole stage). These units are reasonably well dispersed across the entire Project area, producing a landscape dominated by mature forest but perforated by early-seral forest openings. The acreage of older forest has decreased and forest edge and ecotone have increased, but viable connections between blocks of mature forest have been retained" (see The Nature of Fragmentation and Habitat in the Divide Landscape and the Project Area sections).

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	The Environmental Consequences section puts the effects of the action alternatives in the context of the existing condition and concludes that "[l]ack of fragmentation in the interior west is more of an issue than fragmentation… In the past, fire and topographic diversity in the west together produced a temporally dynamic, naturally fragmented landscape. Because western populations of wildlife have a long association with naturally fragmented forested landscapes, as a group, they may be less impacted by forest fragmentation at some spatial scales… In managed forests, timber harvest is the major method of regenerating forested stands to create multiple-aged forests on a landscape, because large-scale wildfires are mostly prevented. A timber harvesting practice that might cause a relatively great short-term change from pre-harvest conditions may be integral to long-term strategy for maintaining populations of all wildlife species, especially in areas that experience frequent and wide spread disturbance" (see Effects Common to All Action Alternatives section).
The DEIS also claims at 365 that only 71-82% of the project area will be treated, without addressing cumulative past losses from logging and firewood harvest. **(22-11)** Regardless, simply adding up acres that have not been logged does not define impacts on wildlife. The patch size of forested snag habitat, as well as suitable elevation (below 7500 feet) **(22-12)** was never addressed in the DEIS. The current best science addresses "woodpecker management areas" so that snag habitat is not overly fragmented, and occurs at suitable elevations. We would like to know how (1) the total acreage of forest habitat in the project area, **(22-13)**(2) how much of the forest (acres) in the project area are suitable for woodpeckers and songbirds as per elevation (under 7500 feet) that has not had firewood harvest or forest thinning, **(22-14)** and (3) what are the sizes of these contiguous patches of suitable habitat currently, and what will they be after project implementation**.(22-15)** This type of information is critical for the public to understand how this project will impact this large suite of species. Woodpeckers require relatively large areas for management, including up to 900 acres for a breeding pair.	**(22-11)** The snag analysis in the FEIS was revised to account for past harvest quantitatively and firewood cutting qualitatively. The Snags and Woody Debris section in the wildlife analysis includes a discussion of the effects of past activities on snags and woody debris (see Cumulative Effects, Past Activities). **(22-12)** The Snag and Woody Debris section in the FEIS provides a context for the effects to snags associated with the project by demonstrating that the snag levels remaining post treatment are within the range of snag levels found in unmanaged landscapes (see the Direct and Indirect Effects section). The wildlife analysis in the FEIS has been updated, in response to this comment, to provide additional information on patch size of species associated with snag habitat. The comment references best science; however no reference is provided. **(22-13)** The wildlife analysis in the DEIS and FEIS include discussions of the amount of forested habitat in the project area suitable for woodpeckers (see Pileated Woodpecker, Project Area Habitat and Populations, Habitat section, Hairy Woodpecker, Habitat and Population in the Project Area, Habitat section, Sensitive Species, Black-backed Woodpecker Section, and Wildlife Appendix D, Viability Analysis in Appendix D – Wildlife Appendices). **(22-14)** The cumulative effects analysis in each of the aforementioned sections includes a description of the effects of past harvest. Appendix E – Wildlife Cumulative Effects Analysis describes the relationship of past harvest on the current vegetation condition (see Appendix E, Wildlife Cumulative Effects Analysis in Appendix D – Wildlife Appendices). Additional information has been added to the FEIS regarding habitat requirements of songbirds that have been carried forward in the analysis per the table 'Resident

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	Bird Species in the Divide Landscape that have been identified as (1) “Birds of Conservation Concern” in Bird Conservation Region 10 by the U.S. Fish and Wildlife Service (USFWS) or (2) “Species of Concern” in the State of Montana by the Montana Natural Heritage Program (MNHP)’. “Relative abundance” is derived from field observation in the Divide landscape’ (see Migratory Landbirds and Shorebirds, Population Status in the Project Area). See also 22-13. **(22-15)** Suitable habitat patch size for woodpeckers and other bird species pre- and post-project implementation is described and updated (in response to this comment) in the FEIS where those data are available from the scientific literature. For example, see the Pileated Woodpecker, Population Potential section and the Northern Goshawk, Potential Population Density sections. See also 22-13 and 22-14.
There is no analysis of the cumulative loss of snag habitat along roads. **(22-16)** This information needs to be included in the analysis. Also, will firewood harvest be allowed along new roads, and roads opened for logging? **(22-17)** The conclusions in the DEIS at 365 that there will be no adverse impacts (they will remain abundant and well-distributed) of the project on snag- associated wildlife is based on a claim that the Forest Plan direction for snags will be met. The science that reported that "averaging" out snags across the landscape provides a valid "proxy" for viability of wildlife was never cited. This assumes that areas with snags will still have cavity-nesting birds because there are "extra" snags somewhere else. This is impossible. The Forest Plan direction is not a valid proxy for viability of snag- associated. Please provide a valid proxy for your conclusions on project and cumulative impacts on snag-associated wildlife. **(22-18)** Since the Helena National Forest has never monitored any of the snag- associated wildlife population trends (hairy woodpecker, pileated woodpecker), and there is no valid habitat proxy for these species on the Forest, the agency should clearly disclose in the FEIS that the status of these species is unknown, and the project will thus have unknown impacts on these species. **(22-19)** This should be identified to the public, and addressed in the purpose and need of the project, including a statement that the NFMA and NEPA have both been violated in past management of this landscape due to a failure to monitor wildlife and to provide a valid habitat proxy as a substitute for monitoring. The DEIS claims that project impacts on snag-associated wildlife are not irretrievable, but if it takes 100 years to regrow a 10 inch dbh tree, which is needed for cavity construction, **(22-20)** why isn't this essentially irretrievable?	**(22-16)** See response to 22-11 above **(22-17)** Firewood cutting will not be permitted on temporary roads constructed or roads closed to the public during for this project. Firewood products would be made available prior to piling slash at the landing. This would limit piles being torn apart from firewood gathers, promote more usage of solid material, and limit impacts to air quality. **(22-18)** Samson, in his Habitat Estimates For Maintaining Viable Populations of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, Pileated Woodpecker, American Marten, and Fisher (see Samson 2006 in the project record), articulates a process for calculating habitat thresholds necessary to maintain viable populations in Region 1 of the Forest Service. Samson, in his Conservation Assessment of the Northern Goshawk, Black-backed Woodpecker, Flammulated Owl, and Pileated Woodpecker in the Northern Region, USDA Forest Service (see Samson 2006 in the project record), defines a ‘population’ for each of the aforementioned species. In other words, the project level is not the appropriate scale to determine viability for the goshawk, pileated woodpecker, and marten. **(22-19)** Monitoring conducted for hairy and pileated woodpeckers is described in the Hairy Woodpecker , Habitat and Population in the Project Area, Local Populations and Monitoring sections and the Pileated Woodpecker, Population Status and Habitat in the Project Area, Local Observations and Monitoring sections. **(22-20)** The Irreversible and Irretrievable section in the Snags and Woody debris section in the FEIS has been updated in response to this comment.

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The mitigation for snags is to primarily provide snags outside of treatment units (B-13). This is not mitigation. Providing existing habitat is not mitigation. The DEIS needs to identify that there is actually no effective mitigation for logging on snags. This is actually implied in the Forest Plan, where T-1 lands, which dominate the project area at 17,588 acres or 74%, are not supposed to be managed for snags. The gradual loss of snag habitat over Forest Plan implementation, and its effects, need to be addressed in this site-specific implementation. **(22-21)**	**(22-21)** The Snag and Woody Debris section of the wildlife analysis in the DEIS and FEIS describes current snag levels (see Snags and Woody Debris, Project Area Status, Forest Plan Considerations) and how snag management would maintain wildlife habitat on treated acres as follows: "Under the action alternatives, snags would be managed through the design of un-treated areas, retention of live trees for recruitment in treated areas, and setting snag retention goals in treated areas. In harvest units, contractors are required to fall any tree they identify as a safety hazard (OSHA Instruction CPL 2-1.19). However, retention goals would be included in prescriptions; if a snag designated for retention must be removed for safety, it would remain onsite as coarse woody debris and a substitute snag selected for retention… In regeneration harvest units, roughly 20 snags per 10 acres from a mixture of diameter classes available, with seral species preferred, and all snags >20" dbh would be retained. In intermediate harvest units, the goal would be to retain all snags greater than 20" dbh; and additional snags to average at least 2/acre of the largest and most windfirm snags available, or as many are available less than that. There would also be abundant live trees in various size classes retained for snag replacement as well as inoperable areas and buffers in units where snags would be retained" (see the Effects Common to All Action Alternatives section). See also the Forested Habitats of Special Concern section in the FEIS.
The DEIS notes repeatedly that snags will fall in 5-10 years. How does the agency know that for cumulative impacts (reasonably foreseeable actions) **(22-22)** that snag habitat will still average out at 2/acres in 10 years? Where was this evaluated?**(22-22)**	**(22-22)** Although unlikely, should snag densities fall below 2/acre in the future, opportunities will still exist to create snags in untreated areas, intermediate harvest units and reserve portions of regeneration harvest units. The Snags and Woody Debris, Effects Common to All Alternatives section cites research describing snag longevity in light of mountain pine beetle outbreaks.
The current best science notes that snags should be provided on every acres. **(22-23)** Yet the DEIS notes at 213 that snags are not required in harvest units because there will be enough snags elsewhere. This indicates that the proxy for snag habitat on the Helena National Forest is invalid. Since the agency is completing a number of Forest Plan amendments for this project, why not do one as well for snags, so that the Forest Plan is providing valid management direction to ensure viability of wildlife. **(22-24)** To proceed with such a large project with invalid Forest Plan direction for wildlife is a violation of the NFMA, since the agency knows that diversity will not be maintained.	**(22-23**) Reference not provided by commenter. However, additional references have been added to the Snags and Woody Debris section regarding snag distribution. **(22-24)** A site-specific amendment is not required since Forest Plan standards will be met upon project implementation. See the Snag and Woody Debris section, Regulatory Framework and Forest Plan Consistency.
The cumulative impact of cutting down snags in prescribed burning areas that are less than 12 inches dbh was never addressed in the analysis. **(22-25)** It was claimed that burning will increase snags, but the actual data was never provided. If snags are going to be cut, how do you know that they will be replaced? If snags are going to be cut, how do you know that total snag numbers suitable for wildlife (over 10 inches dbh) will be maintained or will increase? Where is the data?	**(22-25)** The Fire and Fuels analysis describes target mortality in burn units, but is also clear that the amount of tree mortality due to burning is highly dependent on burning conditions, and the amount and severity of burned acres. Should snag levels fall below Forest Plan Standards snag creation in treated and untreated areas is a future option. Snag levels for snag associated wildlife species, post project implementation, are described in the respective species section (see Pileated and Hairy Woodpecker, Conclusions and Regulatory Framework and Forest Plan Consistency sections). Also the Regulatory Framework and Forest

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	Plan Consistency section of Snags and Woody Debris concludes that "Forest Plan Standards (Forest Plan p. II/21-will be adhered to in all action alternatives".
Old Growth The Forest Plan old growth strategy is so outdated, it will not ensure a diversity of wildlife. The 5% standard as is being applied to the project area for management, even though there is 12.5% old growth in this landscape, was never based on any science to begin with. Now there is a considerable body of science that demonstrates that at least 20-25% old growth is required by many species, and this was likely much higher, up to and over 50% for the lynx. **(22-26)** As we noted with snags, since the agency is doing a number of Forest Plan amendments for the project, why not do one for old growth, **(22-27)** and make it a valid conservation strategy. Using the Forest Plan as a measure of maintaining diversity is a violation of the NEPA. The old growth MIS for the Forest Plan requires 25% old growth. Songbirds require from 20-25%. The MIS goshawk requires 20% old growth. The MIS pine marten requires 20% old growth. Why isn't this information in the DEIS in assessment of impacts**?(22-28)** This project will have irretrievable impacts on old growth as not recruitment is planned, even for 5%, well distributed across the landscape, which would be every 10,000 acres. **Forest Plan Management Areas** There are 17,588 acres of T-1 MA acres in the project area (DEIS 13). There are only 455 acres of wildlife emphasis habitat, or 2%. Yet this is occupied grizzly bear habitat and occupied lynx habitat. How is the MA designation suitable for changed conditions since 1986, with expansion of the grizzly bear population and designation of the lynx as a threatened species? The management direction for the project area is so outdated it needs to be changed to address changed conditions for wildlife since 1986. **(22-29)** Any logging and burning project, both of which destroy grizzly bear and lynx habitat for many decades or more than 100 years, should be postponed until a Forest Plan update is completed. Other that the invalid claims that pine beetles have created a huge wildfire risk, the agency has provided no emergency needs for the Telegraph project, other than subsidizing the timber industry. It actually may not matter what the MA designation is in the Forest Plan, however, as these appear to have no relevance to actual on-the-ground management. For example, logging and burning is purported to benefit wildlife in M-1 and W-1, including the lynx, even though habitat will actually be removed. The agency is not planning any Forest Plan amendment as a result,	**(22-26)** No reference is provided relative to this comment. However, with regard to lynx, we agree that multistory forest is important to lynx and cite Squires research to that end in the analysis in the DEIS and FEIS. See the Predator-Prey Relationships and Conclusions section for Canada Lynx. See also Squires (2010) in the project record. **(22-27)** A site-specific amendment is not needed since the action alternatives would all be consistent Forest Plan standards for old growth (see the Northern Goshawk and Pileated Woodpecker Regulatory Framework and Forest Plan Consistency sections in the FEIS). See also the Forested Habitats of Special Concern section in the FEIS. **(22-28)** The Forest Plan identifies two species as management indicators for old growth: northern goshawks and pileated woodpeckers. The respective analyses in the FEIS provides a description of the species' habitat including overlap with old growth (see the Northern Goshawk, Habitat Use and Population Processes and Habitat Analysis, Nesting and Foraging Habitat R1 VMap Analysis sections and Pileated Woodpecker, Habitat Use and Project Area Habitat and Populations, Habitat sections). The American marten is identified as an indicator of mature forests (See American Marten, Regulatory Framework and Forest Plan Consistency). However, additional information is provided in the FEIS with regard to songbirds that occur in the project area and their association to old growth. **(22-29)** The management direction for lynx in the Forest Plan has been updated through the Northern Rockies Lynx Management Direction (see Canada Lynx, Regulatory Framework and Forest Plan Consistency). Management direction for grizzly bears is currently being amended into the Helena NF Forest Plan to incorporate relevant direction from the draft Northern Continental Divide Ecosystem (NCDE) Grizzly Bear Conservation Strategy (GBCS) (see Grizzly Bear, Cumulative Effects, Reasonably Foreseeable Activities).

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demonstrating that the Forest Plan MAs are merely window- dressing.	
Elk This project will be a test for the Forest Plan amendment that identifies 1000 acres over 0.5 miles from an open motorized route as elk security, replacing the 4(a) standard that requires a balance of hiding cover with roads. The implementation of this security strategy is not based on any peer-reviewed science, or published recommendations by a group of elk experts, as is the general procedure for establishing wildlife management recommendations. In the case of the Helena Forest's proposed security definition, this is in- house science with no outside peer review of any kind, and no outside input as to the basis for the recommendations. Instead, the new security definition is clearly designed to increase logging, since the cover requirement in the current Forest Plan is being removed. The impacts of the new direction for security is merely an experiment, which is not the basis for establishing direction in the Forest Plan. This new direction violates the NFMA because there is no science behind it, and it clearly does not promote elk habitat. **(22-30)** It is being mislabeled as a wildlife standard in the Forest Plan when it's purpose is actually to promote logging. A good demonstration of this invalid definition of a wildlife standard actually being a timber management standard is the conclusions in the DEIS that the Telegraph project will not impact elk security, in spite of the planned logging and burning on several thousand acres (B-8). We are unable to understand what specifically are the criteria for FWP hiding cover. **(22-31)** Lonner and Cada (1982) cited as the source of these criteria include no actual data as to how it was derived. This paper also was not peer reviewed, and has not been cited in any peer-reviewed papers as valid as far as we are aware. Making up hiding cover criteria, which has never been validated, is not appropriate for a Forest Plan standard. There are actual monitoring data on how canopy cover affects hiding cover, as per the Montana elk-logging study, and they reported that there is no canopy cover in any forest type that provides 100% hiding cover. Add this to the obvious conflict the agency is ignoring in the Helena Forest Plan, which notes that hiding cover as per canopy cover and hiding cover as per horizontal cover are not synonymous. This is recognized in the DEIS, where MFWP canopy cover requires 50% of the landscape, while FS hiding cover requires only 35o/o hiding cover, because the quality if the latter is much higher. The DEIS notes that in-house monitoring was done to determine that 40% canopy cover equates to Forest Service hiding cover. The actual analysis data was not provided**.(22-32)** We are going to FOIA this analysis,	**(22-30)** The Forest recently completed a programmatic amendment that replaces the hiding cover/open road density ration (original Forest Plan standard 4a) with a security analysis based on the concepts outlined in Christensen et al (1993) and Hillis et al. (1991) as modified to reflect local conditions in collaboration with MFWP, a basic tenet of Christensen et al. (p. 5) that "[i]t is essential that cooperation and coordination with State biologists be used to formulate criteria" and Hillis et al. that "strict adherence to the guidelines should be avoided". The security methodology – now the amended standard 4a – is described in Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife in the wildlife report in the FEIS. **(22-31)** The hiding cover methodology is described in Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife as follows: "Hiding cover is based on the MFWP definition of 'a stand of coniferous trees having a crown closure of greater than 40 percent' (USDA 1986, p. II/18). The methodology for modeling hiding cover is described in USDA (2009a) and includes a consideration of stand age in areas that have experienced previous timber harvest and/or prescribed fire activity. Any stand that is less than 15 years old that has been treated with timber harvest or prescribed fire is not considered hiding cover." (See Assumptions, Information Used, and Methodologies/Scientific Accuracy section.) The Wildlife Appendix B – Telegraph Project Hiding Cover and Field Validation in Appendix D – Wildlife Appendices in the DEIS and FEIS also described the hiding cover methodology utilized in the project analysis. **(22-32)** The field data collected to determine hiding cover will be included in the project record. **(22-33)** The Wildlife Appendix B – Telegraph Project Hiding Cover and Field Validation in Appendix D – Wildlife Appendices in the DEIS and FEIS also described the hiding cover methodology utilized in the

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and would also like to know the peer-review process.**(22-33)**	project analysis. Additional references to the hiding cover methodology have been added in response to this comment.
The overall analysis of cover is impossible to understand. We would like to know the answers to the following questions: -What is the canopy cover required in old clearcuts and those that have been precommercially thinned? Various photos show these units that have very open canopies. Which ones were identified as hiding cover as per canopy cover, and which ones fall below this level? Photo 17 at 356 is an example of an open-canopied clearcut that is horizontal hiding cover. Would this stand qualify as FWP hiding cover, and if not, is it still considered hiding cover by the FS standard? Photos 10 and 12 at 327-28 also show saplings are distributed irregularly, which would be unlikely to provide a 40% canopy cover. Yet they are clearly horizontal hiding cover. So were they counted as hiding cover for the DEIS, and if so, why? Also, Photos 4-5 at 277 qualify as hiding cover even though there is no 40% canopy cover, as is the case of Photo 6 at 278. Please discuss how canopy cover is being measured in these regenerating stands to qualify as hiding cover, when there does not appear to be a 40% canopy. -If a clearcut is thinned down from 900 trees per acre to 300-350 trees/acre (DEIS 277, Photo 5), does this still qualify as hiding cover as per the FWP definition? What is the tree density required for FWP hiding cover in regeneration units? -The DEIS notes, for example, at 298 that tree trunks provide hiding cover for elk. Tree trunks are not part of the canopy, since they go down to the ground. They are part of horizontal cover. So why are they being counted as canopy cover? (**22-34)**	**(22-34)** The definition of hiding cover is the same regardless of whether or not an area has been harvested. This definition is described in Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife in the Assumptions, Information Used, and Methodologies/Scientific Accuracy section as of 'a stand of coniferous trees having a crown closure of greater than 40 percent.' The photos in the Rocky Mountain Elk section are: (1) Early summer elk range on Treasure Mountain in the west-central part of the Project area. Close-canopied lodgepole pine forest (now mostly dead) predominates, but numerous small openings, open-grown forest, and ecotone are interspersed throughout. In late June 2012, cow elk were grazing in this mesic grass/forb opening; others were bedded along the forest edge, and calves were hidden further back in the timber. (2) Summer elk habitat at Sure Thing Swamps on the Continental Divide in the southeastern part of the Project area. This extensive complex of sub-irrigated meadow and multi-aged forest, coupled with scant human presence, provides an ideal environment for elk from early summer green-up to fall frost. High quality forage and water are readily available and summer thermal and hiding cover are close at hand. The prevalence of subalpine fir, Engelmann spruce, and young lodgepole pine will ensure that the forest remains largely green and intact in spite of beetle-induced mortality in mature lodgepole pine. (3) An elk calving area along the Continental Divide above Mike Renig Gulch. Numerous drainage-head springs just off the Divide provide good sources of water and forage for cow elk. Logs and clumps of understory conifers provide cover for calves. (4) Hiding cover provided by tree trunks in a mature/pole stand of lodgepole pine in upper Telegraph Creek. Most overstory trees have been killed by mountain pine beetle, and hiding cover will be disappearing as trees fall over the next 5-10 years. This view is from 2012. (5) Hiding cover provided by saplings in a 25-year-old clearcut in upper Ontario Creek. The cover provided by these bushy young conifers is typical of the 20 to 40-year-old cutting units throughout the Project area. Density in this stand is about 900 trees/acre. Most of these stands can be thinned to 300-350 trees/acre (11-12 foot spacing) and still provide hiding cover. (6) Hiding cover as provided by a more open-grown sapling stand in Mike Renig Gulch. Although tree density here is a bit less than 300 trees/acre, sight

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	distances throughout most of the unit remain below 200 feet—as required for “hiding cover”. The photos 4-6 above state that they reflect hiding cover while photos 1-3 are not intended to represent hiding cover according to the captions.
The analyses of project impacts on elk is invalid as per the NEPA, because there were no direct assessments of project impacts on hiding cover, roads and security. The project area contains only about 22% of the EHU acres (23,669 of the total acres in the elk herd units, or 117,659 acres) which "washes out direct impacts." **(22-35)** The DEIS (49. 354) notes that 97% of the project area has been affected by the mountain pine beetle (354), and that all dead trees will fall down in 10 years (355), although the DEIS at 287 says this will happen in 1-5 years. This is a reasonably foreseeable action, so it is not clear how the hiding cover measurements for the Telegraph project were actually measured. If most of the hiding cover will be gone from areas dominated by lodgepole pine in 1-10 years, this demonstrates that Forest Plan standard 4(a) will not be met in that time period. Yet there is no analysis in the DEIS as to how this has factored into the analysis of project impacts on elk. It would appear that elk hiding cover will not be able to meet the Forest Plan direction for summer range, a problem that was never identified. Given this upcoming Forest Plan violation, how is the current project addressing this crisis? Why is this project being planned in the face of such a huge impact on elk, including openings of many new roads and new road construction? **(22-36)** The DEIS at 286 notes that a shift in hiding cover throughout this landscape may eventually require shifts in motorized access and hunting regulations. The DEIS at 287 notes that hiding cover maintenance is important for hunting opportunities. Yet the cumulative impact of the pine beetle, which is ongoing and will be apparently severe within 1-10 years, was never evaluated in regards to how the Telegraph project is being planned, or assessed as per cumulative impacts. **(22-37)** The DEIS also ignores how past logging (Clancy Unionville) and upcoming logging (South Tenmile) will impact elk security, and Forest Plan standards. These projects demonstrate an overall landscape impact on wildlife that needs to be assessed in the DEIS. This is a severe shortcoming of this DEIS that needs to be corrected. Please define the past and expected hiding cover for the South Divide landscape for a valid cumulative effects analysis. **(22-38)**	See also 22-31 for hiding cover methodology. Additional information has been added to the FEIS to further clarify canopy cover methodology used to identify stands with 40% canopy cover. **(22-35)** The direct and indirect effects analysis for hiding cover in the DEIS and FEIS disclose the project effects (see Rocky Mountain Elk, Direct and Indirect Effects sections). The cumulative effects section describes effects other than those associated with the project including outside of the project area but within the herd unit (see the Cumulative Effects section and Appendix E, Wildlife Cumulative Effects Analysis in Appendix D – Wildlife Appendices. **(22-36)** The Forest recently completed a programmatic amendment that replaces the hiding cover/open road density ration (original Forest Plan standard 4a) with a security analysis which replaced a required amount of hiding cover with cover guidelines intended to provide flexibility to be responsive to the referenced mountain pine beetle impacts in this comment (see for example Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife in the Assumptions, Information Used, and Methodologies/Scientific Accuracy section). Additional analyses have been included in the Rocky Mountain Elk section to be responsive to this comment. **(22-37)** The Vegetation section in the FEIS provides simulations of growth and yield of select forested stands (see the Forested Vegetation section in the FEIS). The Rocky Mountain Elk section in the FEIS has been updated to incorporate these simulation outputs in terms of the availability of future hiding cover. **(22-38)** The Forest Plan requires that the elk analysis be conducted at the herd unit level (Helena NF, USDA, 1986, p. II/17). The cumulative effects section describes the spatial boundary used for cumulative effects for elk and the analysis therein (see Rocky Mountain Elk, Cumulative Effects section).

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The DEIS clearly fails to address the impact of the project on elk security. **(22-39)** The Forest Plan new definition of security is used, whereby any and all logging will not impact elk security (B-8). The agency never addresses how the new security definition will impact retention of elk on public lands during the hunting season, **(22-40)** which is a key issue for the project. Instead of addressing this impact, the agency talks about elk population numbers, which is not the same as elk displacement. We would like the agency to provide their best estimate as to how much elk displacement from public lands will increase due to the project based on increased road densities and reduced hiding cover. **(22-41) We would specifically like to know how the project will impact elk security as per the current best science in Hillis et al. (1991), which defines security as contiguous blocks of hiding cover at least 250 acres in size at least 0.5 miles from an open road. The increases in new roads within security areas should also be identified, as these reduce security. (22-42) We would like to know this impact IN THE PROJECT AREA, which is a suitable size for elk analysis as per home range identified by Canfield and others (2012, 2013), which included coordination with the HNF.(22-43)**	**(22-39)** The analysis in the Rocky Mountain Elk section includes a discussion of the existing condition for security, in terms of the hiding cover/open road densities and security area methodologies (see the Hiding Cover/Open Road Density Index and Elk Security Areas section in the FEIS). Effects to elk security are described in Elk Security during the Hunting Season section of the Environmental Consequences. These sections have been updated to reflect the amended standard 4a. **(22-40)** The FEIS has been updated to reflect the amended standard 4a and includes a discussion of the intent behind the amended standard to retain elk on public land. See the Rocky Mountain Elk section and in Appendix F of Appendix D – Wildlife Appendices. **(22-41)** The FEIS includes a discussion of effects of logging on elk, including displacement (see Rocky Mountain Elk, Direct and Indirect Effects and Conclusions section). That analysis has been update to include additional references that quantify potential displacement effects. **(22-42)** The Forest recently completed a programmatic amendment that replaces the hiding cover/open road density ration (original Forest Plan standard 4a) with a security analysis based on the concepts outlined in Christensen et al (1993) and Hillis et al. (1991) as modified to reflect local conditions in collaboration with MFWP, a basic tenet of Christensen et al. (p. 5) that "[i]t is essential that cooperation and coordination with State biologists be used to formulate criteria" and Hillis et al. that "strict adherence to the guidelines should be avoided". The security methodology – now the amended standard 4a – is described in Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife in the wildlife report in the FEIS. Effects to elk security including temporary roads and closed roads used for hauling has been updated in the FEIS in response this comment and to update the analysis to reflect the amended standard. The discussion of project effects to hiding cover within security areas has also been updated. **(22-43)** It's unclear what the commenter is referencing with regards to Canfield and Others 2012, 2013. The U.S Forest Service and Montana Department of Fish Wildlife and Parks Collaborative Overview and Recommendations for Elk Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests paper was released in 2013 and included Canfield as an author. If this is the paper that the commenter is referencing, then that paper identifies the scale of analysis as an elk analysis unit, "which in many cases may reflect elk herd unit home ranges…" (MFWP and USDA Forest Service, 2013, p. 7). That document also goes on to conclude that [w]e expect that elk analysis units will be large enough to encompass this natural variation in the way elk use landscapes" (Ibid p. 8). This paper does not specifically identify the project

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	area as the suitable size for an elk analysis. The Helena NF Forest Plan provides the framework for elk analyses with the requirement that analyses will be conducted on a herd unit basis (USDA 1986, II/17).
The DEIS at 281 notes that the project area contains 7% elk security. Is this as per the new Forest Plan amendment, or by the complete Hillis definition? Even by the new Forest Plan definition, why is 7% security considered adequate, and not creating sever displacement impacts on elk during the hunting season? If this displacement is severe, why is this project being planned, which will further displace elk? There is no discussion as to why mature bulls have decreased in DH 215 in recent years (DEIS 300). This indicates that security even at present is not adequate, which means that eliminating the hiding cover requirement from the management of security will only exacerbate the problem. The effectiveness of the Forest Plan Amendment for security needs to be addressed in regards to effectiveness in light of existing problems. **(22-44)** The DEIS at 287 notes that hiding cover maintenance is important for hunting opportunity, and that eventual shifts in hiding cover may require changes in motorized access and hunting regulations. The DEIS at 292 notes that elk sue will change in burned areas as they seek out places where hiding cover remains. Thus even the agency does not actually believe that clearcuts within elk security areas would not impact their value in holding elk on National Forest lands, as is claimed in the DEIS at 242. Are there any specific studies that can confirm this, that elk continued to use landscapes in the fall hunting season in spite of large clearcuts away from roads in western Montana? The claim at DEIS 287 that logging and burning will not reduce the effectiveness of elk security area is implausible, given that the agency also notes that sight distances will be increased as well as screening cover reduced (287). The agency did not sight a single study in southwestern Montana where logging failed to impact elk distribution in the hunting season. This claim is also highly unlikely as past logging has likely contributed to the ongoing problem of elk displacement from public lands during the hunting season. **(22-45)** The agency's claim that the project will not exacerbate elk displacement to private lands (B-8) was not supported with any analysis**.(22-46)** The agency's claim that roads not open to the public mitigate displacement impacts to elk (B-8) was also not supported with any science.**(22-47)** Lyon et al. (1985) in the Elk-Logging Study noted that hiding cover is important to elk, with 2/3rd hiding cover being optimum. Black and others also identified an optimum of 40% hiding cover on elk summer range.	**(22-44)** The security analysis in the DEIS was based on the definition used in crafting the programmatic Forest Plan amendment. This is described in the Assumptions, Information Used, and Methodologies/Scientific Accuracy section in the FEIS, Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife. The Environmental Consequences section provides an analysis of the project effects on elk security and has been updated in the FEIS to provide additional information on displacement effects associated with the project (see the Hunting Season Elk Security section in the Environmental Consequences). The DEIS and FEIS includes a discussion of elk population parameters in Hunting District 215 within which the project occurs. This includes a discussion of bull elk with a recognition that the percentage of mature bulls in the project area has decreased due to "hunting pressure too heavy for the available security on fall range" (see Montana FWP Population Management: Hunting Districts, Hunting District 215 section). **(22-45)** The statement in the Rocky Mountain Elk section in the FEIS concludes that elk "use of the landscape will change as elk seek out places where hiding cover remains post-treatment". The analysis does not conclude that elk would no longer remain on public land contrary to the commenter's statement. (See Rocky Mountain Elk, Direct and Indirect Effects, Summer Range and Calving Areas, Hiding Cover). The Environmental Consequences section has been updated in the FEIS to provide additional information on displacement effects associated with the project. **(22-46)** The Environmental Consequences section has been updated in the FEIS to provide additional information on displacement effects associated with the project. **(22-47)** The Environmental Consequences section has been updated in the FEIS to provide additional

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The impact of the project and pine beetles on hiding cover clearly needs to address the loss of hiding cover in logging units, and whether cover in pine beetle forests will be of equal quality to cover in clearcuts and intermediate logging units. **(22-48)**	information on displacement effects associated with the project. **(22-48)** The Environmental Consequences section has been updated in the FEIS to provide additional information on the effects to hiding cover based on treatment type.
The impact of new roads in security areas was never evaluated in the DEIS. **(22-49)** There will be 1 miles of new roads, and 4 miles of opened roads in security areas in Alternative 2, and 3 opened road miles in security areas in Alternative 3. The science that demonstrates these roads will not impact security was not cited. It would seem that these roads all will have impacts on elk until they regrow trees in 15 years to several decades. The new Forest Plan definition of security that requires no hiding cover, besides being "in-house science" by the Forest Service, is not exactly supported by various comments in the DEIS. For example, it is noted at 281 that when the trees fall, the limited security in the project area will be exacerbated. The DEIS at 282 notes that cover helps elk avoid detection, and that hiding cover has a role to play in security, and it is a key component of security. If so, why isn't there at least a minimum requirement for hiding cover in security in the Forest Plan amendment? **(22-50)** Please identify habitat effectiveness before, during and after the project within the Project Area so that the public can understand direct impacts of the project. Include all roads that will be constructed and/or opened for logging and administrative activities. **(22-51)** These increases are quite significant within a 37-square mile project area, with Alternative 2 increases open roads by 1 mile per section, and Alternative 3 increases them by 0.8 miles per section. The FWP definition of hiding cover does not address cover needs of almost all other wildlife, including pine marten, lynx, and mule deer, for example. What is the specific rationale for using the FWP definition as a result? How were these other species considered in this determination? Please discussion whether or not logging down a dense forest stand (over 40% canopy cover) down to a 40% canopy cover means that hiding cover is being maintained. **(22-52)** **<u>Please define why the current analysis of hiding cover in the Elk Herd Units is so high, at 65-73%, since the pine beetle epidemic peaked in 2009, or almost 6 years ago.</u>** Why are all these trees still considered to be green, when the DEIS notes that 97% of the project area has been impacted by the pine beetle. It does not seem possible that Forest Plan standard 4(a) is currently being met! The DEIS claims that this standard will be met before and after project	**(22-49)** The DEIS does include a discussion of effects of temporary roads in security areas (see Rocky Mountain Elk, Environmental Consequences, Elk Security during the Hunting Season, Hunting Season Elk Security). However, additional analyses have been provided in the FEIS on the percent of elk security during project implementation. **(22-50)** The Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area was signed on March 2, 2016 and the amended standard described in that decision replaces standard 4a analyzed in the Telegraph DEIS. The FEIS analysis is updated to reflect the amended standard (see the Rocky Mountain Elk section, Elk Security during the Hunting Season) which includes cover guidelines. The FEIS also includes a discussion of the intent behind the amended standard including the rationale for cover as a guideline rather than a standard. See the Rocky Mountain Elk section and in Appendix F of Appendix D – Wildlife Appendices. **(22-51)** Habitat effectiveness during project implementation has been analyzed for the DEIS and will be carried forward into the FEIS (see Rocky Mountain Elk, Environmental Consequences, Habitat Effectiveness). This is also described in the Assumptions, Information Used, and Methodologies/Scientific Accuracy section in the FEIS, Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife. **(22-52)** Habitat definitions for other wildlife species analyzed in the DEIS and FEIS are described in the Assumptions, Information Used, and Methodologies/Scientific Accuracy section in the FEIS, Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife. With the exception of mule deer, effects to other species analyzed in the project area are not predicated on elk hiding cover (see also Wildlife Appendix A – Wildlife Analysis Approach in Appendix D – Wildlife Appendices in the FEIS). **(22-53)** Wildlife Appendix B – Telegraph Project Hiding Cover Methodology and Field Validation in Appendix D – Wildlife Appendices in the DEIS and FEIS describes

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completion, which appears to be impossible in both cases. **(22-53)** Since thermal cover will be so severely impacted by the pine beetle, why is the agency logging Douglas-fir stands on winter range? **(22-54a)** **Pine Marten** The pine marten is an MIS for the HNF (DEIS 419). The DEIS notes at 620 that they avoid large openings, especially in the winter. There is no population trend data for this MIS on the HNF, or within the Divide landscape. The DEIS estimates that there are 12,036 acres of marten habitat in the project area (422) which would be 51% of this landscape. It is noted that they like 10-20 tons per acre of coarse woody debris, and that large snags improve their habitat. Mitigation measures for snags do not require snags in any given landscape. Mitigation measures for logs do not require that they be jackstrawed, or under a canopy. Thus there are no actual mitigation measures for this MIS. In addition, the project will reduce their habitat from 51% currently down to 43% alternative 3 and 37% Alternative 2. Thus proposed habitat reductions vary from minus 16-26%. All of the activities will degrade pine marten habitat, including clearcutting (loss of snowshoe hares and red squirrels), intermediate harvest (loss of snowshoe hares and red squirrels), precommercial thinning (loss of snowshoe hares), and prescribed fire (loss of snowshoe hares). There was no analysis as to why 37-43% habitat will suffice for this species, or why 12.5% old growth will provide enough winter range. There was no analysis as to the fragmentation impacts of clearcutting, including many over 40 acres. There was no analysis of the combined loss of cover, or fragmentation, from the combination of proposed units. Thus there is no actual information provided in the DEIS as to how this project will maintain pine marten in the project area, including within roadless lands. **(22-54b)**	how hiding cover has been determined in the project area. Additional information has been added to that appendix to address this comment. **(22-54a)** Chapter 1 of the FEIS articulates the purpose and need for the project as (1) resiliency, diversity, and reforestation; (2) hazardous fuels reduction; (3) provide wood products for local economies; and (4) maintain and improve watershed values. The wildlife analysis in the DEIS and FEIS describe effects to thermal cover on winter range: "Wintering elk historically have made use of open forest environments on winter range when snow conditions allow. The proposed treatments in thermal cover on winter range should create conditions that are attractive to wintering ungulates (as per Thompson et al. 2005)" (see Rocky Mountain Elk, Environmental Consequences, Winter Range and Thermal Cover). **(22-54b)** A discussion of the population status, and challenges in determining that status, for American martens is included in the DEIS and FEIS (see American Marten, Local Population). The DEIS and FEIS include a discussion of the sufficiency of remaining marten habitat post-treatment (see American Marten, Conclusions). Additional information has been provided in the FEIS in response to this comment.
Goshawk The goshawk is an MIS for old growth on the HNF (DEIS 419), 434). There is no population data for the goshawk on the HNF, even though logging has been ongoing since 1986, or Plan implementation. The agency provided no monitoring data as to how logging may impact goshawk habitat, including the Telegraph project. This impact is inevitable, as snowshoe hares will be reduced in precommercial thinning units, and red squirrels will be eliminated in clearcuts and reduced in intermediate harvest units, and reduced or eliminated in burning areas. Red squirrels and hares have been shown to be key prey species for goshawks in Montana. The goshawk population status in Montana has been in a decline rate of 3.34% since 1966 (DEIS 432). There was no analysis as to what may be	**(22-55)** The population status of goshawks is described in the DEIS and FEIS at Population Status and Habitat in the Project Area, Goshawk Monitoring and Potential Population Density. Additional information has been added to the Monitoring section in the Regulatory Framework and Forest Plan Consistency section in response to this comment.

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affecting this trend, or how the proposed project may relate to this trend. **(22-55)**	
The analysis data for goshawks in the DEIS is questionable. The research by Clough did not measure goshawk habitat by home range, only by post- fledging area. In addition, Table 181 at 444-445 indicates that over 50% of the project area has a canopy cover of over 50%. The impacts of the pine beetle on 97% of the project area apparently have not been considered, either directly or cumulatively. There is no analysis of the recommended 20% old growth for this species, since there is only 12.5% old growth in the project area. The DEIS at 448 also claims that clearcuts will still provide foraging habitat for goshawks, which is directly contradicted by the southwest goshawk guidelines. The DEIS at 448 also says that precommercial thinning will have no effect on goshawk foraging, which is clearly false. The DEIS at 419 claims that intermediate harvest will benefit goshawk foraging, even though a key forage species, the red squirrel, will be reduced. The DEIS also claims that burning will improve goshawk foraging habitat, even though 2 key prey species, the hare and the squirrel, will be reduced/eliminated. The DEIS at 455 states that forests will be too dense for goshawk flight, based on a 1983 report, which has been contradicted by more recent research. Although the DEIS noted that fragmentation with clearcuts and forest thinning may benefit the red-tailed hawk, there was no attempt to identify a threshold level of fragmentation and forest openings where goshawk habitat will be converted to red-tailed hawk habitat. The EIS at 456 misrepresents the recommendations of the southwest guidelines claiming that a mosaic of forest types is recommended for goshawk foraging. The best habitat for goshawks as per those recommendations is mid-aged forest, mature forest, and old forest. Harvest of forests is only recommended to provide an even flow of these older forest types, not because they provide goshawk prey. In addition, large clearcuts (over 4 acres in size), although they will provide a habitat mosaic, will not provide goshawk foraging habitat. **(22-56)**	**(22-56)** A-Wildlife - The goshawk analysis in the DEIS, and FEIS, is based in part on the Northern Goshawk Northern Region Overview: Key Findings and Project Considerations (USDA 2009c) which serves as the basis for the goshawk analysis. Regarding the comment about Table 181, that table indicates that 81% of the project area is comprised of trees greater than 5" dbh and 50% canopy. This actually is in keeping with the impacts of the mountain pine beetle since regeneration in these dead stands has advanced (see also the Vegetation report in the FEIS, Forested Vegetation Affected Environment, Group 1: Lodgepole Pine Dominated Stands). The citation for the statement related to recommended 20% old growth for goshawks is not provided. Nevertheless, the DEIS and FEIS synthesize field research that has shown that "goshawks are more versatile in their use of habitat than was believed when the Forest Plans were written. Goshawks have specific requirements for nesting and post-fledging habitat (close-canopied mature forest) but otherwise reveal themselves as forest generalists, not particularly useful as old-growth indicators (Braun et al. 1996; Reynolds et al. 1992; Clough 2000; McGrath et al. 2003)" (See Northern Goshawk Habitat Use and Population Processes). The DEIS at 448 does conclude that regeneration harvest "may provide a diversity of foraging opportunities" (see Environmental Consequences, Direct and Indirect Effects, Nest Habitat Analysis). This statement is supported by references cited in the Environmental Consequences, Home Range/Foraging Habitat Analysis section. The DEIS at 448 does not state that precommercial thinning would have no impact on goshawks. Rather, it states that "precommercial thinning is not expected to remove nesting or foraging habitat such that treated areas would no longer provide nesting or foraging habitat" (see Environmental Consequences, Direct and Indirect Effects, Nest Habitat Analysis). The DEIS, and FEIS, also includes reference to project effects on red squirrels (see the Environmental Consequences, Home Range/Foraging Habitat Analysis section). With regard to the comment on forest density and goshawk flight, the commenter mentions more recent science but does not provide a citation. The DEIS and FEIS include reference to Squires and Reynolds (2006) and Reynolds (1983) with regard to goshawk flight and dense forest conditions (see the Environmental Consequences, Home Range/Foraging Habitat

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	Analysis and Conclusions sections). In other words, the analysis does not rely on 1983 research exclusively. The DEIS and FEIS include an analysis of the potential for the project to create habitat conditions favorable to red-tailed hawks. That analysis recognizes that fragmentation facilitate red-tailed hawk habitat development at the expense of goshawk habitat and that a threshold level of fragmentation has not been described in the literature (see the Conclusions section). The DEIS and FEIS provide an analysis of project impacts to goshawk nesting and foraging habitat (see the Northern Goshawk, Environmental Consequence section). Additional information has been included in response to this comment.
The DEIS at 288 claims that hiding cover will vanish in lodgepole pine stands in 10 years, but will come back as regeneration fills in the next few decades. Elsewhere the DEIS (754) claims that hiding cover will develop in harvest units in 15 years. The DEIS at 289 notes that over time, dense vertical structure via succession will increase hiding cover as trees fall. We would like the FEIS to include an analysis of goshawk habitat specifically by the southwest guidelines, including dbh and canopy cover, for the 6 vegetation stages identified. The DEIS does not provide this, even though this is the best set of recommendations for goshawk management, as they were developed by goshawk experts from multiple agencies, and not just in-house recommendations. Then we would like to have a conclusion as to whether the level of proposed habitat will be adequate to maintain goshawks. **(22-57)**	**(22-57)** The DEIS and FEIS Northern Goshawk analysis includes a comparison of project conditions, pre and post implementation for goshawks to Reynolds et al. 1992 (see Affected Environment, *Northern Goshawk Regional Overview Analyses* and Environmental Consequences, *Home Range/Foraging Habitat Analysis* and *Post-Fledging Area Analysis*). Additional information has been added to the FEIS to demonstrate that the analysis reflects Reynolds vegetative structural stages. The DEIS and FEIS provide an analysis of the remaining goshawk habitat post-project implementation relative to goshawk habitat requirements and population viability. See the Environmental Consequences, *Conclusions* for example, and Appendix D, Viability Analysis in Appendix D – Wildlife Appendices.
We would also like to have a cumulative effects analysis for goshawks in the Divide landscape (south), including past projects (Clancy-Unionville), and proposed projects (Tenmile South and Telegraph). This is the best way of identifying a population trend of goshawks in this landscape. Ifthe habitat trend is down, then this should be identified and discussed as per planned timber management practices. **(22-58)** **Three-toed Woodpecker/Hairy Woodpecker** This woodpecker will supposedly be maintained by the Forest Plan standard of 2 snags per acre, averaged out over the landscape. This proxy is not valid for this species, given that they have been nesting in habitats on the HNF of over 70 snags per acre. And past research on this species has recommended the provision of woodpecker management areas for viability, areas that are not disturbed with timber harvest, and areas where insect populations are maintained at natural levels. For a given nesting pair, these areas should be over 500 acres. Where would these areas exist in the project area currently, and after	**(22-58)** The DEIS and FEIS describe the cumulative effects boundary as the combination boundary because this is the scale at which the effects to the approximate three home ranges in the Project area would no longer be measurable. The combination boundary also provides a sufficient landscape to assess pattern and structure in the context of larger processes (see Northern Goshawk, Cumulative Effects). This section also describes effects of cumulative effects activities including the Tenmile South Helena project and the Clancy Unionville project.

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the project is planned. We would like to have the acres identified and mapped in the FEIS to demonstrate the suitability of this landscape for this snag-associated species**.(22-59)** The hairy woodpecker is the "bell weather" for populations of cavity-nesting species. The DEIS portends to analyze habitat levels for the hairy woodpecker in the project area, but notes that the habitat model does not include lodgepole pine, the dominant tree species in the project area. There is no monitoring data available for this species on the HNF, and the habitat proxy of 2 snags per acre averaged out over the landscape as per the Forest Plan is an invalid measure of viability. The DEIS does not thus demonstrate this species is either currently viable, or will remain viable, after project implementation. The cumulative impacts of past and planned logging in the Divide landscape remain unknown. At a minimum, the agency needs to identify those acres that actually contain at least 2 snags per acre over 10 inches dbh, and to determine if they are in habitat patches large enough for nesting hairy woodpecker. How much of the landscape can lack 2 snags per acre before this and other species are significantly reduced? This threshold needs to be known before any analysis is possible for logging impacts on cavity-nesting species, of which the hairy woodpecker is an MIS for. **(22-60)**	**(22-59)** The Snag and Woody Debris section in the FEIS provides an analysis of project effects on these habitat components. Additional information has been added to the FEIS with regard to three-toed woodpeckers to address this comment. **(22-60)** The DEIS and FEIS describe monitoring efforts for hairy woodpeckers in the project area (see Affected Environment, Local Populations and Environmental Consequences, Monitoring), and project effects to hairy woodpecker habitat (Hairy Woodpecker, Environmental Consequences) and project effects to snag habitat (Snags and Woody Debris, Environmental Consequences). The DEIS and FEIS include a viability analysis for the hairy woodpecker. See Appendix D, Viability Analysis in Appendix D – Wildlife Appendices. Cumulative effects are described in the Cumulative Effects section and in Appendix E, Wildlife Cumulative Effects Analysis in Appendix D – Wildlife Appendices.
Pileated Woodpecker The pileated woodpecker is an MIS for old growth on the HFN. Yet there is no analysis in the DEIS as to how much old growth is recommended, or is available, in this landscape. Since existing old growth is below the recommended levels, viability of this species is in question for the Divide landscape. The past logging impacts, as well as planned additional logging, also need to be addressed for old growth habitat so that a population tend analysis is completed for the Divide landscape. **(22-61)** The current best sciences for pileated woodpeckers as per habitat management were not even mentioned in the analysis. This includes the provision of at least 3 home ranges, over 900 acres each, for a connected small breeding population. This includes no clearcutting! Thus the current and past projects will have eliminated large portions of the landscape as suitable for pileated woodpecker as per published science. **(22-62)** Current pileated woodpecker habitat is estimated at 7,643 acres, which is only 32% of the project area. This does not address whether or not habitat is concentrated within home ranges for the woodpecker. Historically,	**(22-61)** The DEIS and FEIS describe the amount of overlap of pileated woodpecker habitat with old growth (see Affected Environment, Project Area Habitat and Populations, Habitat section). The Forested Habitats of Special Concern section in the FEIS describes the amount of old growth at multiple scales including the Divide landscape (see Old Growth Affected Environment, Old Growth Estimates at Broad Scales) and cumulative effects to old growth (see the Cumulative Effects – All Special Habitats section in the Forested Habitats of Special Concern section). Viability is addressed in Appendix D, Viability Analysis in Appendix D – Wildlife Appendices **(22-62)** The DEIS and FEIS include a home range analysis for pileated woodpeckers that includes a minimum of 1000 acres per home range (see Pileated Woodpecker, Affected Environment, Project Area

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there was likely 51% of the landscape that was pileated woodpecker habitat, or 11,992 acres (4349 past logging plus 7643 current acres). With the project, pileated woodpecker habitat will decline to 27-28o/o, or almost just half of historical levels. There is no information in the DEIS as to this amount of habitat will sustain a local breeding population. **(22-63)** The impact of the pine beetle has been demonstrated to have no impact on the pileated woodpecker, unless stands are clearcut. Long-term monitoring of pileated woodpecker populations has demonstrated a sharp decline in populations caused by clearcutting in areas infested with pine beetles, while populations did not decline in pine beetle areas where limited or no clearcutting was done. The proposed project may result in elimination of this MIS from the project area, but this potential is never identified in the DEIS. We would like the agency to map suitable pileated woodpecker home ranges in the project area that meet the minimum requirements for pileated woodpecker habitat as identified by Bull and Holthausen (1993). These areas should contain suitable habitat over 900 acres for each territory. We would like to know how many suitable territories current occur, and will occur after the project is implemented. We would also like to know how many such areas exist in the Divide landscape as compared to historical levels, so that a population trend can be estimated, as is required by the HFP. **(22-64)**	Habitat and Populations, Population Potential). Project effects, including regeneration harvest (i.e., 'clearcutting') are described in the Environmental Consequences section. **(22-63)** The amount of habitat needed to provide viability for pileated woodpeckers is described in Appendix D, Viability Analysis in Appendix D – Wildlife Appendices. The number of home ranges that the project area is capable of supporting and effects to those home ranges is described in the Affected Environment, Project Area Habitat and Populations, Population Potential section and the Environmental Consequences section. **(22-64)** Criteria used to map pileated woodpecker habitat are described in the FEIS in the Assumptions, Information Used, and Methodologies/Scientific Accuracy section in the FEIS, Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife. These criteria are based on synthesis completed by Samson (2005, 2006) that include consideration of Bull and Holthausen (1993) (see those references in the project record). In addition, the Pileated Woodpecker analysis in the FEIS describes the rationale for determining the size of home ranges in the project area (see Affected Environment, Habitat Use).
Migratory Birds The DEIS does not identify that the project will have adverse impacts on at least 4 migratory bird species not previously discussed, including the Clark's nutcracker, the brown creeper, the black-backed woodpecker, and the Cassin's finch. These species will be adversely affected because the conifer seed resource will be reduced with logging and burning, older forest habitat will be fragmented for the brown creeper, a forest interior species. In addition, fragmentation and clearcutting will further reduce the potential to provide large, unlogged home ranges of over 900 acres for the black-backed woodpecker. **(22-65)** **Moose** The HFP requires as a wildlife standard that moose habitat will be managed to support current populations. The DEIS at 500 claims that the project will improve moose habitat. This is impossible, as moose depend upon forest interior habitat with alpine fir regeneration as winter habitat. The project will eliminate ongoing succession for moose winter range. It will also reduce summer thermal habitat for this species, that can be heat stressed at quite low temperatures. The agency's	**(22-65)** The wildlife analysis in the FEIS includes a discussion of project effects to all four species referenced in this comment (see the Migratory Landbirds and Shorebirds, Population Status in the Project Area section). Additional information has been included in the FEIS in response to this comment. **(22-66)** Moose are discussed in the Topics not Analyzed in Detail section since effects described in Wetland Habitats and Riparian Zones and Rocky Mountain Elk are also applicable to moose. Additional

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violation of this Forest Plan direction indicates the project will have adverse impacts on this species. We would also like to have an assessment of moose population trends in the Divide landscape. Since moose populations in many areas of Montana are declining, is this happening in the Divide landscape as well? What has been the impact of past logging on moose winter habitat on moose population trend, as well? **(22-66)** **Inventoried Roadless Lands** The burning of roadless lands does not benefit wildlife, and there is no actual science provided in the DEIS to support this claim. Examples of wildlife harmed by this burning includes the lynx, goshawk, pine marten, elk, moose, mule deer, and various migratory birds, including Montana Species of Concern. The science and monitoring demonstrating benefits to wildlife need to be provided in the FEIS. **(22-67**)	information has been included in the FEIS in response to this comment. **(22-67)** The wildlife analysis in the FEIS includes a discussion of effects of prescribed burning – including reference to beneficial aspects of burning where applicable) across the project area on lynx (Canada Lynx, Effects Common to All Action Alternatives for example), goshawk, (see Northern Goshawk, Effects Common to All Action Alternatives for example), marten (see American Marten, Effects Common to All Action Alternatives for example), elk (see Rocky Mountain Elk, Effects Common to All Action Alternatives for example), moose, mule deer (see Mule Deer, Effects Common to All Action Alternatives for example), and migratory bird species (in various sections in the FEIS). Additional information has been added to the Moose section in response to this comment.
Cumulative Effects Analysis There is no cumulative effects analysis for the total impacts created by past logging in the Clancy-Unionville project, or the proposed Tenmile South project (up to 20,000 treated acres), along with the Telegraph project. Simply listing these projects does not demonstrate to the public how wildlife will or has been impacted. Without a thorough cumulative effects analysis for the Divide landscape, the impacts of the ongoing management strategy cannot be determined, including the impact on Montana Species of Concern, threatened species, and MIS. Also, the impact of roads and loss of cover on elk vulnerability, security and displacement, and snags, including firewood harvest, will remain unknown. Without this information, the agency cannot complete any reasonable planning of additional management actions. **(22-68)** **Forest Plan Amendments** The agency is continuing the illegal practice of piecemeal dismantling of the HFP with yet more site-specific amendments (clearcuts over 100 acres, logging on winter range in the winter, reducing thermal cover when it is already deficient). The project will at a minimum require a cumulative effects analysis to assess how exemptions of the big game standards are related to the existing problems of elk displacement from public lands during the hunting season. **(22-69)** This is a known problem that is being ignored by the Forest Service. The role that Forest Plan amendments, and thus failure to implement the Forest Plan in the past, is key to determining if this practice should continue. The agency is also violating the requirements of Forest Plan amendments by doing site-specific amendments that are not unique to resources in that area. Unless	**(22-68)** A-Wildlife and Planning - – Appendix E – Wildlife Cumulative Effects Analysis describes the relationship of past harvest on the current vegetation condition and by turn wildlife habitat (see Appendix E, Wildlife Cumulative Effects Analysis in Appendix D – Wildlife Appendices). The cumulative effects of past activities are accounted for in the baseline data for the respective species' habitat. The activities associated with resource specialists cumulative effects analysis was reviewed and updated for analysis completed for the FEIS. This table is located in Appendix C of the FEIS. **(22-69**) A cumulative effects analysis of past Forest Plan amendments is included in the consideration of the proposed amendment for the FEIS and the draft Record of Decision.

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there is some unique characteristics that requires a site-specific amendment, the agency is required to do a programmatic Forest Plan amendment. **(22-70)** **Analysis of Fragmentation Impacts of Large Openings** There is no analysis in the DEIS as to how clearcuts and forest thinning will impact wildlife that are unable to cross these areas either in the winter (pine marten, lynx), or any time (such as the northern flying squirrel). There is no summary of the openings that will be created including adjacent units that will remove cover. There is also no information as to the analysis on large openings that was provided to the Regional Office. This analysis should be provided to the public in an appendix. The public should know exactly why the agency has decided to create large openings, and that a thorough assessment of the impacts has been completed before a harvest design is planned. **(22-71)**	**(22-70)** The Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area was signed on March 1, 2016. This programmatic amendment to this Forest Plan standard includes all lands across the Divide Landscape which includes the Telegraph Vegetation Project area. **(22-71)** The analysis in the DEIS and FEIS includes discussions of project effects, which includes regeneration harvest and thinning, on lynx in particular in terms of the ability of these species to navigate openings created by these treatments (see Canada Lynx, Direct and Indirect Effects for example). Additional information has been included in the FEIS to address the effects of regeneration harvest on the ability of martens and northern flying squirrels to move across the landscape. Opening size as required by NFMA was considered in the DEIS and the FEIS. Request for larger than 40 acre openings is not required due to the unprecedented nature of the Mountain Pine Beetle epidemic. The DEIS served as the 60 day public notice for this activity.
Grizzly Bears The DEIS at B-11 states that the 0.55 mile of open road in occupied grizzly bear habitat as per the Forest Plan does not apply to the project area. Since the Forest Plan occupied habitat was defined in 1986, and the bear population has recovered and expanded, and the project area is identified as "occupied," we believe the Forest Plan in fact applies to the project area. As per the distribution zone, the definition of biological activity centers is quite vague, required records of 5 females with cubs in 10 years. How is searching for these bears? Are there valid surveys being done? If not, it's hard to have a criteria when there is no actual survey methods/requirements in place. We question why the DEIS claims that the 2 sow/cub groups sighted in the Divide landscape are identified as "transient bears" just moving through. How is this known? And where are they going to? The area south of the project area is not included in a distribution zone, so there are not supposed to be bears there. **(22-72)**	**(22-72)** T&E standard 3 is specifically applicable to areas well outside of the Telegraph project area. Standard 3 (Helena NF Forest Plan, USDA, 1986, p. II/19) applies to 'occupied' habitat which is clearly identified as unique to the Lincoln Ranger District (p. D/3).

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The determination that the project will not adversely impact the grizzly bear is clearly incorrect. The DEIS incorrectly claims that the project will benefit bears by an increase in forage, improve whitebark pine viability, and a restriction of public use on roads used for logging. First, the DEIS did not provide any specific science for the Divide landscape demonstrating that logging will improve grizzly bear forage. This claim is questionable elsewhere, as well. The claim that huckleberry will increase is not supported with any analysis and/or monitoring, and has been refuted in the Greater Yellowstone Ecosystem. The specific plant species that will increase, and their importance to grizzly bears in the Divide landscape, needs to be identified to support this claim. Logging will also reduce winter forest cover for big game, which are sought after by grizzly bears in the spring (carrion). Forest thinning will also reduce the amount of time over the summer that green forage is succulent, due to the loss of shade. In addition, the DEIS did not provide any documentation that road use will not impact grizzly bears (displacement and increased mortality risk via habituation) because the general public is not included in this motorized use. The claim that treatment of whitebark pine will benefit grizzly bears is clearly false. Beside the questionable claim that logging and burning will improve whitebark pine (it will increase the adverse impacts of weather, including weather extremes), the management of whitebark pine viability depends on the management of lower elevation forests, which are the primary forage resource for the Clark's nutcracker, the bird that plants whitebark pine. In addition, the red squirrel makes the whitebark pine nuts available to grizzly bears, and this species as well depends on lower elevation forests for population maintenance. Overflow of squirrels into thd higher elevation, more severe climate of the whitebark pine forest depends upon good habitat adjacent to these areas. This key issue in management of whitebark pine for grizzly bears was not even noted in the DEIS. **(22-73)**	**(22-73)** The Environmental consequences section for the Grizzly Bear cites several references that describe treatment effects on grizzly bear foraging habitat (see Direct and Indirect Effects). The DEIS and FEIS conclude that road use associated with the project could displace grizzly bears (see the Grizzly Bear, Conclusions section). Whitebark pine has been identified as an important food source for grizzly bears (see Affected Environment, Grizzly Bear Biology, Habitat Use, Behavior, and Movements). The Forested Habitats of Special Concern section in the FEIS describes the mechanisms whereby whitebark pine is dispersed (see Forested Habitats of Special Concern, Whitebark Pine Affected Environment, Whitebark Pine Ecology section).
There was also no analysis of the open road and total road density for grizzly bears that will occur during the project. **(22-74)** Open road densities will increase by up to a mile, or almost a mile per section. That level alone will increase displacement of bears. The impact will also increase displacement through increased travel levels, and will certainly increase habituation and mortality risks. It will be impossible to increase open road densities by almost a mile per section without adversely impacting the grizzly bear. The DEIS suggests that cover is not important to grizzly bears, and thus that the loss of cover from logging and burning will not affect bears. **(22-75)** No actual science was provided for this. Grizzly bears are known to spend a great deal of time in cover, so reduction of cover will probably reduce the ability of bears to find security in a landscape. Reduction of cover will also increase bears	**(22-74)** Open and total road densities in the project area during project implementation has been added to the Grizzly Bear analysis in the FEIS in response to this comment. **(22-75)** The DEIS and FEIS cite references that describe the role of cover in grizzly bear habitat use (see Affected Environment, Grizzly Bear Biology, Habitat Use, Behavior, and Movements for example).

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to the impacts of other activity, including motorized use on roads, including within logging units even when the roads are closed, as they will still be travel lands for people, including hunters, as well as illegal ORV use. The agency claims that the project will not adversely impact the grizzly bear based on the 2014 BiOp for the grizzly bear for the Divide landscape. **(22-76)** The Divide landscape is 265,185 acres, or 414 square miles. The BiOp for that project portends that take of grizzly bears will be allowed for a "net" increase in 30 miles of temporary road. This allows an average increase in open road density of 0.07 miles per section. Yet the increase in open road density for the Telegraph project is almost a mile per section, depending on the alternative selected. There is no measure of incidental take of grizzly bears unless this criteria includes a road density. Simply measuring take on roads is meaningless for grizzly bears. It is also unclear why the criteria of total roads was not included, which has been standard for measuring take of grizzly bears by the FWS in the past. **(22-76)** The DEIS did not define what a "net increase" means. This needs to be clarified in the FEIS. **(22-77)** The impact of the proposed Tenmile South project, as reasonably foreseeable, was not included in the analysis of cumulative impacts to the grizzly bear in regards to open and total road densities. **(22-78)** There was essentially no information in the DEIS in regards to the Forest Plan amendment planned to incorporate management direction for the NCDE draft conservation strategy. What is the direction for this proposed amendment, and how will it impact the project? **(22-79)**	Also, the Conclusions section identifies cover removal as a potential negative effect to grizzly bears. **(22-76)** The Forest is working with USFWS on project impacts to grizzly bears. The commenter is taking issue with the USFWS biological opinion for consultation on the Forest Plan in 2013. Their comment relative to that biological opinion is outside the scope of this project. **(22-77)** A definition of 'net increase' has been added to the FEIS in response to this comment. **(22-78)** Additional information has been added to the FEIS in response to this comment. **(22-79)** The Forest Plan amendment to incorporate management direction from the NCDE draft conservation strategy is identified in the Cumulative Effects, Reasonably Foreseeable Activities section. Additional information is included in the FEIS in response to this comment.
The 2014 BiOp for bears in the distribution zone does not include any analysis of logging and burning impacts on grizzly bears, or any analysis of increases in total roads and the impacts of logging on whitebark pine viability and availability to grizzly bears. Also, this BiOp does not address the mileage of currently closed roads that will be opened for a project. Thus the take statement provided by this 2014 BiOp is not valid for the Telegraph project. A site-specific BiOp is required to provide an incidental take statement for the Telegraph project. **(22-80)** **Lynx** The agency failed to demonstrate how Forest Plan standard ALL S1 will be met with the project. What is the measure of significance for landscape connectivity? Why isn't there any analysis of this to support the claim that connectivity will be maintained. To maintain means that threshold levels of connectivity required by lynx will be maintained, so what are these? Please measure connectivity currently and after the proposed project by habitat that lynx will travel through in the winter in	**(22-80)** The Forest is completing a site-specific biological assessment for the Telegraph project; we are working with the USFWS on project impacts to grizzly bears. **(22-81)** The DEIS and FEIS describe consistency with NRLMD standard ALL S1 regarding habitat connectivity as follows: "The Project Area is to the west of the continental divide which has been identified as a linkage area in the NRLMD. The project maintains the general forested nature of the action area as well as landscape connectivity permitting broader lynx movements. Planned treatments in Alternative 2 affect 4,859 acres of lynx habitat (46% of habitat in the project area [10,524 acres]; Alternative 3 affects 2,744 acres (26% of mapped lynx habitat). Connectivity across larger landscapes will not be affected by this project since more than half of the lynx habitat would remain untreated in either action alternatives although the lynx may have to temporarily adjust movement patterns during project implementation." (See Canada Lynx, Regulatory Framework and Forest Plan Consistency.)

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corridors wide enough to provide interior forest habitat. Although there is no information on this for the lynx, the pine marten requirements for corridor width do exist, and so these would also probably fit the lynx. **(22-81)** We would like to request an analysis of the estimated historical, current, and future percentage of the Divide south landscape that provided (will provide) lynx travel habitat, based on valid criteria for corridor width and cover levels. We would like to know how the historical percentage of travel habitat compares to current levels due to past logging (Clancy Unionville), along with planned logging (Telegraph and Tenmile South). We would also like to see maps of these identified corridors, including overlays of planned harvest units in the Divide landscape south. **(22-82)** There is no analysis in the DEIS about what the threshold level of lynx winter habitat is that ensures persistence. Without evaluating this key habitat, there can be no assessment of environmental impacts. This impact is never addressed in the Lynx Amendment or BiOp for this amendment, so it must be addressed for this project. **(22-83)** Since there was no analysis of the amount of winter lynx habitat that is required for persistence (multi-storied mature forest stands), the issue of recruitment of lynx winter habitat was never addressed. **(22-84)** The clearcut logging of lodgepole pine stands will eliminate these stands as recruiting lynx winter habitat. This severe impact was never identified in the DEIS, even though it is likely the most significant adverse impact that the project will have on lynx, aside from habitat fragmentation by clearcutting, forest thinning, and burning.	The DEIS and FEIS cite several references that describe lynx movement many of which document that lynx will move through openings as needed (see Lynx Habitat Use Patterns). **(22-82)** The analysis for lynx is based on direction in the NRLMD and is described in the Affected Environment, Management Direction and Lynx Analysis Units (LAUs) sections. As the commenter noted in comment 22-81, there is no information on corridor width for lynx. Also, there are no standardized levels of cover required by lynx for travel habitat (see response to 22-81 and reference to literature). However, additional information has been included in the FEIS in response to this comment. **(22-83)** Lynx habitat is analyzed according to the NRLMD which establishes thresholds for project impacts to lynx. The NRLMD direction is intended to conserve and promote the recovery of Canada lynx in the context of land management. The NRLMD decision will "provide habitat to maintain a viable population of lynx in the Northern Rockies …and will provide habitat to support persistence of lynx in the Northern Rockies in the long-term" (see NRLMD, USDA 2007, particularly p. 40). The DEIS and FEIS provide an analysis of the effects to multistory lynx habitat ('winter' habitat) and consistency with the NRLMD established thresholds (see 22-84 below). **(22-84)** The amount of 'winter' lynx habitat in the project area - i.e., multistory habitat - is described in the Affected Environment, Habitat in the Project Area section. Effects to that habitat are analyzed in the Environmental Consequences, Direct and Indirect Effects, section. Consistency with the NRLMD (which establishes thresholds for effects to lynx habitat) is described in the Regulatory Framework and Forest Plan Consistency section.
Photos 16-17 of the DEIS demonstrate that key tree species are developing in the lodgepole pine stands, including alpine fir and spruce. There is a highly significant difference between the development of lynx winter habitat via clearcutting or natural succession, since clearcutting will emphasize regeneration of lodgepole pine, while natural succession will promote alpine fir and spruce (DEIS 396), the key tree species in lynx winter habitat. **(22-85)** This difference is never addressed in the DEIS, even though it is essentially an irretrievable impact of clearcutting on lynx. There is no analysis in the DEIS as to what the expected percentage of clearcuts that will develop the dense understory (over 4,000 saplings per acres) that will provide winter hare habitat in 15+ years. The DEIS suggests that every stand clearcut will provide this density of saplings, which is highly unlikely. This information should be included in the analysis, so that actual impacts of logging are not underestimated. Also, what are the chances of the dense sapling structure	**(22-85)** The lynx analysis in the DEIS and FEIS provides an overview of lynx habitat in general and specifically in the project area; lodgepole pine is a component of lynx habitat (see Lynx Habitat Use Patterns, Predator-Prey Relationships, Delineating Lynx Habitat, and Habitat in the Project Area sections). Additional information has been added to the analysis in response to this comment. **(22-86)** Optimal snowshoe hare habitat comprises stem densities ranging from approximately 1,800 to 13,445 stems/acre (see LCAS 2013, p. 10). The Vegetation section in the FEIS provides modeled data by tree dominance group that includes estimate trees per acre

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developing after logging versus fire? Which process is more likely to provide future hare winter habitat? **(22-86)** The DEIS also suggests that the project will benefit hares by creating winter hare habitat, while it appears that these areas will be precommercially thinned. Thus the agency is not actually planning on letting these stands provide winter hare habitat. If so, the FEIS needs to provide a statement that none of the clearcut areas will be precommercially thinned until they no longer provide winter hare habitat. **(22-87)** Currently, there are some estimates of the amount of landscape connectivity that lynx will require for persistence. We would like to see this information included in the FEIS, as would be provided on Dr. John Squires and a thesis that has not yet been published. **(22-88)** The DEIS concluded that the project will adversely affect lynx (DEIS 337) but that the take to be caused from this adverse impact has already been addressed in the BiOp for the Lynx Amendment (338). The allowable take for lynx on the HNF is 26,400 acres, of which only 131 has been used to date. It will take over 200 years (if 131 acres per year is exempted, although this 131 acres cover 7 years since 2007) for this take to occur, which means it is essentially unlimited. This level of take is not only invalid as per time line, but it was never demonstrated in the BiOp that a loss of 26,400 acres of lynx habitat would not imperil lynx on the HNF. **(22-89)**	at two time periods in the No Action Alternative. That analysis indicates that the subalpine fir group yields the highest density of trees per acre less than 6" dbh (see Alternative 1, No Action, Direct and Indirect Effects). That analysis also provides data on the composition of the respective dominance groups under the action alternatives for two time periods (see the action alternatives in the Vegetation section). Additional information has been included in the Canada Lynx section in the FEIS that describes regeneration harvest treatments by dominance group to provide information on the expected regeneration response to treatments. **(22-87)** Any future precommercial thinning would be subject to additional NEPA and the Northern Rockies Lynx Management Direction. For the Telegraph project, no precommercial thinning would occur in lynx habitat outside of the WUI (see Canada Lynx, Regulatory Framework and Forest Plan Consistency for example). **(22-88)** Further clarification is needed on this comment. The commenter indicates that information is available that establishes landscape connectivity thresholds but that the information is not yet available. New information has recently become available on lynx reproductive success. Applicable portions of this thesis have been included in the FEIS in response to this comment. **(22-89)** This comment is related to the NLRMD and associated biological opinion and as such is not within the scope of the Telegraph project. However, the comment that the allowable take of habitat would be unlimited given the time frame it has taken the Forest to date to treat some of those 'allowable' acres is unfounded. There is a limit to the amount of habitat covered in the biological opinion on the NLRMD as the commenter has indicated (26,400 acres).
There was no analysis of the lynx population trend in the DEIS, except for a brief mention of a declining population in the Seeley Lake area, which was suggested as being "balanced out" by increases along the Canadian border. The Lynx Amendment BiOp, as well, did not determine why a 6% loss of lynx habitat would not put the Montana population in jeopardy. This is an arbitrary determination that does not ensure conservation of the lynx. Both the BiOp and the Telegraph DEIS have ignored a number of indications that the lynx population through most of Montana is declining, and thus, how well the Lynx Amendment is working. There is no requirement for the Lynx Amendment to monitor lynx populations during the unlimited time that the loss of 6% habitat is allowed. Without monitoring, the Amendment is basically an unknown for lynx population conservation, and as a result, is a clear violation of the ESA, the NFMA, the NEPA and the APA. **(22-90)**	**(22-90)** The DEIS and FEIS point out that "lynx population numbers in western Montana do not appear to have declined appreciably in recent years: they have increased slightly in some areas, decreased in others. Based on monitoring of 129 lynx over a 10 year period

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Lynx winter habitat, although not evaluated in the DEIS, has clearly been significantly reduced by past logging, and will be further reduced with additional logging across the Divide landscape. The DEIS at 3-270 ntoes that historically the landscape in the project area was dominated by large patches of thermal and hiding cover, which would have provided lynx winter habitat. Current winter habitat in this LAU is reported as 5,970 acres. Past logging on 3772 acres in this LAU likely included mostly lynx winter habitat, providing a historical level of about 50% winter habitat (9,942 acres divided by 19,931 acres of lynx habitat in the LAU). Thus half of the lynx winter habitat is already gone. The proposed project in the Telegraph area will reduce it by up to 1594 acres with logging and burning, since many of these stands will develop into lynx winter habitat in the next several decades. The DEIS notes that regeneration up to 5 feet tall develops in 15 years to several decades (DEIS 330), so these lodgepole pine stands will likely recruit to lynx winter habitat in that time period. Thus the potential recruitment of lynx winter habitat will be reduced by this additional logging and burning. This impact is never addressed in the DEIS or in the Lynx Amendment FEIS, or the BiOp for the Lynx Amendment. **(22-91)** The current level of winter habitat for lynx in LAU di-04 is only about 19%, although this level is not entirely clear. There are 4,445 acres of lynx winter habitat in LAU di-04, which comprises most of the 23,669 acre project area. The DEIS never discusses if this level if adequate, or if recruitment of more winter habitat is needed. The proposed activities with logging and burning could reduce recruitment of lynx habitat by up to 2577 acres, which could be 10% of the project area. **(22-92)**	(1998-2007), Squires (unpublished data, 2010) concluded that the lynx population in the Seeley Lake region of west-central Montana has been inching downward while the population in the Purcell Mountains in the northwest corner of the state has been increasing slightly" (see Affected Environment, Lynx Populations). Lynx occurrence in the project area is described in the Affected Environment, Lynx Occurrence in and around the Project Area section. Additional information has been added to the Lynx Populations section on lynx population status in Montana. This remainder of this comment is related to the NLRMD and associated biological opinion and as such is not within the scope of the Telegraph project. However, the NRLMD does include required monitoring associated with fuel treatments which are at the crux of the 6% habitat exemptions (see the NLRMD, 2007, Northern Rockies Lynx Management Direction section, p. 9) **(22-91)** The DEIS and FEIS provide an analysis of the effects to lynx 'winter' habitat including cumulative effects. See the Canada Lynx, Environmental Consequences, and Appendix E, Wildlife Cumulative Effects Analysis in Appendix D – Wildlife Appendices. **(22-92)** Comment 22-91 refers to the amount of winter habitat for lynx at 5,970 acres (which corresponds to the amount of 'winter' – or multistory habitat – in LAU di-04 [see Affected Environment, Habitat in Local LAUs]). In comment 22-92, the commenter refers to 4,445 acres of winter habitat in LAU di-04; the origin of this figure isn't clear. Nevertheless, the wildlife analysis for Canada Lynx discloses the effects to multistory habitat which are within the NLRMD standards (see the Regulatory Framework and Forest Plan Consistency section).
Alternatives The range of alternatives is inadequate because the impacts on wildlife have not been adequately disclosed for all wildlife, from threatened to endangered to migratory birds. The development of alternatives thus could not have been "sensitive" to the severe impacts this project will have on wildlife. Also, the upcoming additional logging in the Tenmile South Project was not evaluated as per cumulative impacts on wildlife. **(22-93)** The impacts of this ongoing program on wildlife has yet to be addressed and identified, making any proposed alternative invalid. Planning for logging is occurring in a vacuum, with wildlife impacts limited to broad, conclusionary statements that there will be no adverse impacts from anything! Sara Johnson, NEC PO Box 125 Willow Creek, MT 59760 iiIW. AWR PO Box 505 Helena, MT 59624	**(22-93)** Appendix E, Wildlife Cumulative Effects Analysis in Appendix D – Wildlife Appendices provides quantitative effects of the Tenmile South Helena project on lynx habitat. These data are included in the Environmental Consequences, Cumulative Effects, Reasonably Foreseeable Activities, in the FEIS to be responsive to this comment.

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Hillis et al. (1991), which defines security as contiguous blocks of hiding cover at least 250 acres in size at least 0.5 miles from an open road.	**LR-1** This reference was cited within the wildlife report.
Lyon et al. (1985) in the Elk-Logging Study noted that hiding cover is important to elk, with 2/3rd hiding cover being optimum.	**LR-2** This document was cited within the wildlife report.
Bull and Holthausen 1983 - We would like the agency to map suitable pileated woodpecker home ranges in the project area that meet the minimum requirements for pileated woodpecker habitat as identified by Bull and Holthausen (1993).	**LR-3** This document was cited within the wildlife report.

Comments	Response to Comments
Letter 23: Randy Arnold, MTFWP	
Montana fish, Wildlife & Parks (FWP) has reviewed the Draft Environmental Impact Statement (DEIS) for this proposal to treat vegetation using timber harvest, precommercial thinning, prescribed fire, and other silvicultural techniques in the ~23,669-acre Telegraph Project area (Telegraph and Ontario creeks drainages) in Powell County. Following are FWP's comments for this project. **Wildlife** **<u>Divide Travel Plan (& Big Game Security Programmatic Amendment to HNF Forest Plan)</u>** FWP's review of the Telegraph Project is concurrent with final stages of the Helena National Forest's (HNF) adoption of the Divide Travel Plan and its associated Big Game (elk) Security Programmatic Amendment to the HNF Forest Plan. In making our comments on the Telegraph Project, we make the assumption of adoption of the Divide Travel Plan and its Amendment without major changes from the Final EIS (i.e., selection of Alternative 5, with limited or no changes in the Telegraph-Ontario creeks area, and selection of the Programmatic Amendment Alternative B.) **(23-1)** Alternative B of the Elk Security Amendment provides cover guidelines for HNF projects: cover that is distributed in a way that mimics a natural range of variation, retention of cover between elk security areas to maintain habitat security and facilitate seasonal movement, vegetation projects that recruit hiding cover, maintenance of elk security areas, provision of continuous dense cover near roads between elk security areas, and design of management activities to avoid reducing cover where the recruitment of hiding cover is an alternative. The Telegraph Vegetation Project may be the first HNF project that incorporates these guidelines, as such, we look to the Forest to provide a model example demonstrating that guidelines--rather than standards--will be effective in retaining and (where feasible) recruiting elk security and cover. **<u>Telegraph Vegetation Project DEIS</u>** FWP supports prescriptions that would enhance whitebark pine and aspen stands, grasslands and meadows. All these habitats provide value to wildlife, disproportionate to their footprint on the landscape. In particular, whitebark pine--which is a keystone species in alpine environments--is declining in its abundance and distribution as a result of white pine blister rust and other factors. Where prescribed burning and thinning may be used to enhance whitebark stands, while not significantly compromising other valuable habitats, then treatments should be completed.	**(23-1)** The Divide Travel Plan decision is a modified version of Alternative 5 which reflects coordination with MFWP on identification of those modifications (see the Divide Travel Plan project record). There were no changes to the Programmatic Amendment Alternative between the FEIS and Decision.
The HNF's goal of increasing forest resilience by providing a diversity of stand ages to reduce the risk of	**(23-2)** Timing of treatments would be staggered just by the very nature of the project: some units will require

Comments	Response to Comments
catastrophic wildfires is consistent with FWP's interest in management for both game and nongame species. Timing of treatments to best provide for a mosaic of habitats would be beneficial for species, like elk and lynx, which use habitats across a diversity of seral stages. **(23-2)** At the same time, retention of relatively unfragmented blocks of mature and late-seral forests will **(23-3)** generally benefit species like northern goshawk and American marten. After consideration--and in light of the need to retain dense cover and security habitat in a highly roaded landscape--FWP requests that the Forest analyze the impact of slashing and broadcast burning in the Jericho Inventoried Roadless Area on elk security habitat and intermittent security habitat. **(23-4)** The Jericho Elk Herd Unit (EHU) provides elk security on only 5,070 acres (vs. 28,019 in the Spotted Dog EHU.) With adoption of the Divide Travel Plan, elk security cover in the Jericho EHU would be 33% lower than the goal for the Blackfoot and Divide Landscapes (17% vs. 50%; Divide Travel Plan, FEIS, Ch 3 Affected Environment & Environmental Consequences, Wildlife, pg 308). Alternative 3 provides for 30 miles of road decommissioning; Alternative 2 as described, allows for none (Table S-2 Treatment summary by alternative in, DEIS Summary, pg xvi). Road decommissioning in this heavily fragmented area would complement implementation of the Divide Travel Plan. Generally, FWP finds Alternative 3 to be more responsive to concerns regarding potential impacts on wildlife and their habitat while simultaneously providing the HNF the opportunity to meet its goals of ensuring diverse and sustainable forest stands, improving conditions for fire suppression, enhancing watershed values, and recovering the economic value of dead and dying trees. Our understanding of this project benefited from a field tour which FWP (Mike Thompson, wildlife manager; Ray Vinkey, wildlife biologist) participated in with Helena National Forest staff--we again thank you for your assistance. **Fisheries** After review of the DEIS, FWP is comfortable that original fisheries and aquatic concerns we brought forward during the earlier Telegraph Vegetation Project phases1 have been addressed. We believe that implementation of either of the action alternatives (22 and 3) is unlikely to lead to a long- term degradation of aquatic resources. FWP is supportive of the road network and drainage improvements that would occur under either action alternative, which would decrease sediment delivery to streams and wetlands in the project area.	pre-weed treatments, other units would be treated with harvest and prescribed fire, prescribed fire windows are erratic, etc.. Wildlife design features are also in place that guide the timing of implementation. For example, logging activities will be confined to a single drainage at a time to minimize disturbance to elk (and by default other wildlife species) (see *Design Features* in the FEIS). The timing of treatments relative to adjacent untreated areas would provide a mosaic of seral stages beneficial for a variety of wildlife. **(23-3)** A majority of the project area would remain untreated in all action alternatives much of which would comprise relatively unfragmented blocks of mature forest (as determined by tree size) (see *Table 1 Assumptions, information used, and methodologies used to determine effects to wildlife, Mature and Early Conifer Forests* and the *Conclusions* section for the Northern Goshawks and American Marten). **(23-4)** The FEIS is updated to reflect the amended big game standard 4a as decided in the *Record of Decision, Big Game Security Forest Plan Amendment for the Divide Travel Plan Area.* As such, it includes an analysis of the effects of all treatments in security and intermittent refuge areas including those areas that occur within Inventoried Roadless Areas in the project area. See the Rocky Mountain Elk section in the FEIS, *Elk Security during the Hunting Season* sections.

Comments	Response to Comments
Letter 23: Randy Arnold, MTFWP	
From an aquatic perspective, FWP believes that Alternative 3 offers the greatest benefit to improving aquatic resources in the project area. In addition to providing for the decommissioning of a number of problematic road segments adjacent to streams, it also includes three additional stream crossing improvements as listed in Table 251 (Alternative 3 stream crossing improvements, in Ch 3 Affected Environment & Environmental Consequences, Transportation, pg 656), two of which differ from Alternative 2 (Table 249, Alternative 2 stream crossing improvements, pg 653). Of particular interest are the upgrades to the ford on National Forest System Road (NFSR) 4100, as well as the relocation of a portion of NFSR 123 near the mouth of Ontario Creek (in conjunction with removing the Ontario Creek bridge). •The current state of NFSR 123 at this location is troublesome from an aquatic perspective. Removing this segment of road from the floodplain of the Little Blackfoot River would benefit fish passage, stream morphology, and riparian function. •Additionally, replacing the existing ford on NFSR 4100 with a bridge would reduce sediment delivery to the Little Blackfoot River and be a direct benefit to fish and other aquatic resources. •FWP recommends that these two particular projects be completed as soon as possible, regardless of the alternative chosen. One concern FWP has with both action alternatives in the DEIS, relative to proposed stream crossing improvements (Table 249, pg 653; Table 251, pg 656), is the replacement of two nonfunctioning culverts in the Mike Renig Gulch area with rock fords. FWP has not surveyed the specific tributaries in question, but if they are perennial or could be expected to be flowing at the time of hauling or other project activities, then rock fords are likely to be unacceptable from both a resource as well as a permitting perspective (specifically, the Montana Stream Protection Act [SPA] 124 permit process). FWP would be more supportive of crossings that provide for the 100-year flood capacity as well as aquatic organism passage**.(23-5)** FWP would be pleased to visit these crossing sites with project personnel prior to project implementation or permits being submitted,**(23-6)** in order to help facilitate a smooth permitting process. Feel free to contact our fisheries biologist for the Telegraph project area, Jason Lindstrom (phone 406-563-7435 at Anaconda, JLindstrom@mt.gov).	**(23-5)** Since the road would be subsequently decommissioned and closed to all motorized vehicles, culvert removal would be most cost effective and allow for fish passage and allow for natural stream channel dynamics. **(23-6)** We would welcome a site review and additional input as far as implementation.

Comments	Response to Comments
Letter 23: Randy Arnold, MTFWP	
DEIS Document One suggestion we would offer relates to the DEIS's Table of Contents (TC). The TC only listed the immediate subsections (first-level titles) under each chapter heading. Thus, it took time (using paper or online DEIS versions) to work through >200 pages of the Wildlife subsection in Chapter 3, figuring out the hierarchy and headings within that subsection. Also, the "Bookmarks" section for Wildlife (when viewing the online version) was missing headings like "Elk," whereas other headings such as the "Environmental Consequences" for other species/topics headings appeared in the Bookmarks at an even level to and after those species' headings. Listing more of the "outline" under each chapter's subheadings in the TC would be much appreciated**.(23-7)** **Summary** Overall, FWP believes that Alternative 3 would offer the best benefits for fisheries and wildlife, as well as best addressing concerns about potential project impacts on fisheries and wildlife habitat. FWP would like to continue working with the Helena National Forest as this project proceeds to implementation, to respond to any potential conflicts that might arise and provide the best outcome for wildlife and fisheries habitat. Thank you for providing the opportunity for FWP to comment on this project. Sincerely, Randy Arnold Regional Supervisor RA/sr	**(23-7)** We will update the FEIS with these suggestions.
Letter 24: Bill Pierce	
Please Keep me on your mailing list. Please use both U.S mail & E-mail. **(24-1)** bill@pierce-builders.com Bill Pierce P.O. Box 130 Elliston, MT 59728	**(24-1)** Thank you for your comments.
Letter 25: Kevin Horne	
Supports the project. Please Keep me on your mailing list. (25-1) Kevin Horne 406-459-8059	**(25-1)** Thank you for your comments.

Appendix F – Response to Comments on Telegraph Vegetation Project Public Check-in on the Forest Service's Proposed Alternative 4

In response to comments on the Telegraph Vegetation Project Draft Environmental Impact Statement (DEIS) a fourth alterative has been developed. A common concern heard during the comment period, which included public meetings and field trips, had to do with the existing fuel composition in the project area adjacent to private land and structures. This led the interdisciplinary team to consider a new alternative (alternative 4) that sought additional opportunities to modify fuels with the use mechanical equipment and prescribed fire adjacent to infrastructure/private lands and within the prevailing wind. This alternative is also designed to complement fuels reduction activities on private land; removal of fuel from treatment units located near existing roads within the Jericho Mountain Inventoried Roadless Area (IRA); locating treatments contiguous to existing treatments and/or natural fuel breaks; and the use of prescribed fire following harvest activities to change the fuel structure and increase effectiveness in mitigating wildfire spread.

In February of 2016, the Helena Ranger District released alterative 4 for public review and comments during an additional 16-day comment period. Twenty comments were received which were considered during analysis and used to inform this Final Environmental Impact Statement (FEIS) and Draft Record of Decision (DROD).

Comments received on alternative 4 ranged from being supportive of the proposal while other comments expressed concern. The following provides a summary of identified issues derived from comments along with associated examples of quotes. Comments received for alternative 4 that were similar in nature to those received on the Draft EIS were not carried forward into the responses below for the purpose of reducing duplicity. Please see in Appendix E: Response to Comments on the DEIS of this EIS. The response to comments below are organized by issue.

Process

Proposal Description: In response to comments received on the Telegraph Vegetation Project DEIS the Helena Ranger District developed a fourth alternative which was presented to the public for review and comment during an additional comment period.

Issue Summary: Comments expressed mixed reactions to the development of an additional alternative and the subsequent comment period that provided the public an opportunity to review and comment on alternative 4. Some comments praised the Forest Service for the additional comment period and a new alternative that was responsive to initial public comment of the DEIS. Others seemed to be surprised at the newly developed alternative and questioned why it was presented only at this point in the planning process rather than in the project's initial stages.

> "*This is the first time in years that I can remember a USFS Responsible Official actually changing the draft in a significant manner that required more public involvement. The line-officers and staff really served the public on this one.*"

> *"How is it that a new Alternative can nearly double the cut from Alt 3, and increase it by 20 percent from the Preferred Alternative (Alt 2) and not have been on the radar in the initial release?"*

FS Response: In response to comments received on the Telegraph Vegetation Project Draft Environmental Impact Statement, the Helena Ranger District prepared a new alternative, alternative 4. Alternative 4 was presented to the public during a 16-day "public check-in" (February 6 to 22, 2016) in which provided the public the opportunity to review and submit comments specific to the new alternative. A public open house meeting was also held on February 9, 2016 which provided the public the opportunity to review maps, proposal descriptions, and talk with resource specialist about the project.

Request for additional alternative(s)

Proposal Description: The Telegraph Vegetation Project DEIS presented three alternatives (alternative 1 – no action, alternative 2 – proposed action, and alternative 3). A fourth alternative was later presented as a result of comments received in the DEIS.

Issue Summary: Three comments were received requesting that a new alternative be developed in addition to alternatives 1 through 4. The different request along with an individual responses for each on is as follow:

> *"A Pro-Recreation alternative is viable and needed by the public. Motorized recreationists are the majority of the visitors to the project area. There is a great need for motorized access and OHV recreational opportunities. We support a Pro-Recreation alternative. We support the Forest Service a Pro-Recreation alternative that provides additional motorized recreational opportunity in order to meet today's needs and the needs of tomorrow. The proposed Divide Travel Management Plan does not reasonably meet the needs of the public for Motorized Access and Motorized Recreation. The Telegraph Vegetation Project should not count on the massive motorized closures proposed by that plan as we plan to appeal that decision".*

FS Response: The purpose of the Telegraph Vegetation Project is to be responsive to the mountain pine beetle outbreak in the area. The commenter has requested that a "Pro-Recreation alternative" be developed that would provide additional motorized recreation opportunities as well as to not rely on roads closed to motorized use under the Divide Travel Plan decision in the Telegraph Vegetation Project area for road decommissioning. Additionally, a similar request for an alternative that would develop additional motorized recreation opportunities was considered in Chapter 2 of the Draft EIS but was eliminated from detail study.

> *"Again, we request that there be included an action alternative that meets all Forest Plan standards and adheres to the Roadless Area Conservation Rule."*

FS Response: All action alternative would meet Forest Plan standards and compliance with the Roadless Area Conservation Rule as shown through analysis. Therefore the request for the alternative was not carried forward. Please see appendix B to this FEIS (Forestwide Standards, Forest Plan Consistency, and Management Area Direction). Please also refer to the Roadless Expanse Resource Report, also in chapter 3 of this FEIS, for analyzes on the potential effects of proposed activities on roadless characteristics and wilderness attributes as well as project compliance with the Roadless Rule.

> *"Please include an action alternative that restores and maintains the amount of qualify of lynx habitat required for conservation."*

FS Response: Lynx habitat is analyzed according to the NRLMD which establishes thresholds for project impacts to lynx. The NRLMD direction is intended to conserve and promote the recovery of Canada lynx in the context of land management. The NRLMD decision will "provide habitat to maintain a viable population of lynx in the Northern Rockies …and will provide habitat to support persistence of lynx in the Northern Rockies in the long-term" (see NRLMD, USDA 2007, particularly p. 40). It could be argued that we have covered consideration of habitat restoration in differing amounts depending on alternative we use the NRLMD as our measure of providing for lynx conservation.

Supportive / Non-supportive

Proposal Description: As a result of comments received on the Telegraph Vegetation DEIS a fourth alternative was developed.

Issue Summary: Twenty comments letters were received that were generally supportive or non-supportive. A summary of both are provided below.

> *"Alternative 4 would treat more acres than the other alternatives and better aligns with current thoughts on the benefit of landscape scale natural resource management."*

> *"Alternative 4 presents some attractive features, for example the Whitebark Pine Release... Alternative 4 seems to be a further step in the wrong direction, as it would require even more roadwork and significantly more clear cutting than the other alternatives."*

FS Response: Thank you for your comment(s). General supportive and/or non-supportive comments help the Forest Service gauge the social values regarding the range of issues pertaining to proposed activities and will be considered in the decision for this project.

Request for additional treatment units

Proposal Description: Alternative 4 proposes approximately 8,103 acres of vegetation and prescribed fire type treatments which is about 1,349 acres more than treatments proposed under alternative 2 and 3,918 than alternative 3.

Issue Summary: Some letters that generally expressed supportive comments also requested additional treatment acres be added to the project than what has been proposed under alternative 4.

> *"I full support ALT 4 at a minimum, and would like to see action increased even more than what is purposed."*

> *"Designate travel routes for harvest should be considered for additional timber removal 60 feet each side of the route to ensure the access remains safe for years to come."*

FS Response: Several areas that the public requested be treated were not carried through into alternative 4. The Forest Service carefully reviewed each request through field evaluation and environmental analysis. Upon review, some requested areas were dropped from further consideration in alternative 4 due to environmental conditions such as wet areas and steep slopes while others were dropped due to lack of access. Also, additional treatments alongside travel routes were considered and

treated under the Forest Wide Hazard Tree Removal Project and were therefore not considered under this project.

Inventoried Roadless Area

Proposal Description: Treatments proposed in the Jericho Mountain Inventoried Roadless Area (IRA) under alternative 4 include regeneration harvest and rearrangement of fuels with the use of mechanical methods on about 601 acres. In addition, alternative 4 proposes to perform ongoing maintenance on 1.0 mile of road and decommission 2.4 miles of road in the IRA.

Issue Summary: Numerous comments were received regarding alternative 4 proposed treatments within the Jericho Mountain IRA. Comments ranged from being supportive to non-supportive. Some commenters felt that alternative 4 treatments in IRA are needed for the purpose reducing hazardous fuels adjacent to the private property and that mechanical equipment would be the most efficient and feasible means of accomplishing proposed activities.

Non-supportive comments primarily expressed concerns about the use of mechanized equipment in IRA, commercial harvest of trees in IRA, and the type of treatments being proposed in IRA such as regeneration harvest. Other comments indicated a general acceptance for treatments within IRA but would rather have them conducted with the use of hand methods. Other comments focused on how the analysis for the IRA (roadless expanse) including cumulative effects was conducted in relation to the 2001 Roadless Rule. The following are comments that represent the range of issues and values pertaining to alternative 4 treatments in the Jericho Mountain IRA along with associated responses per these topics.

Supportive of proposed treatments in the Jericho Mountain IRA:

> *"As I realize this is designated as a roadless area, there should be a onetime variance or permit allowed to harvest this timber. Any new road construction for timber harvest should then be demolished. This area is extremely thick and overgrown area. Hand work cutting and piling timber to burn does not seem like a viable or efficient option."*
>
> *"Changing units from 'prescribed fire only' to allow mechanical equipment is a safer and more cost effective method to meet objectives."*

FS Response: Alternative 4 features mechanical rearrangement of fuels which would include the use of mechanized equipment for the removal of hazard trees, heavy concentrations of slash (jackstraw trees), and slashing understory vegetation prior to prescribed burning. No temporary road construction would be necessary to implement the new treatment types being proposed under alternative 4 in the IRA. The Roadless Expanse Resource Report and FEIS chapter 3, analyzes the use of mechanical equipment in IRA and the potential effects of proposed activities on roadless characteristics.

No mechanical equipment in IRA:

> *"My objection is primarily because a "temporary" road and mechanized equipment would be used in the Jericho mountain inventoried roadless area."*
>
> *"Accommodation should be made for the Jericho Roadless Area that would not allow commercial timber harvest. Hand treatment of fuels, if necessary, should be the method use in IRAs*

FS Response: Temporary road construction in the Jericho Mountain IRA is not proposed under alternative 4 and would not be necessary to implement proposed activities. The use of mechanical equipment to remove fuel from treatment units would be located near existing roads within the IRA. Field recognizance validated that the use of mechanical equipment would be a more effective, feasible, and safer means to rearrange and remove dead and down fuel in units than hand methods. The Roadless Expanse Resource Report and FEIS chapter 3, analyzes the effect to roadless characteristic of non-mechanical methods of treating fuels under alternatives 2 and 3 and the use of mechanical methods in alternative 4.

Potential treatment effects on the Jericho Mountain Roadless Characteristics

> *"It is not clear why fire in IRAs, or mountain pine beetles, have been identified as unnatural processes."*
>
> *"To log in IRAs requires that logging has the same impacts as pine beetles or fire. How can these processes be similar in regards to snag habitat?"*
>
> *"The appearances of the IRAs with the proposed treatments will disqualify them as untrammeled with no apparent footprints of man. For one thing, clearcuts are not natural. Nor are stumps. And nor are huge swaths of skid trails extending for more than a quarter of a mile from roads. Nor are slash piles a natural feature."*
>
> *"Please analyze the wilderness characteristic of the project area both the inventoried and uninventoried roadless areas."*

FS Response: The Telegraph Vegetation Project Roadless Expanse Resource Report, also in chapter 3 of this Final EIS, analyzes potential treatment effects on the Jericho Mountain IRA roadless characteristics for lands within the IRA boundary as well as adjacent unroaded lands (roadless expanse). This report's appendix A summarizes potential effects of proposed treatment in the roadless expanse to wildlife populations and habitat (including snag habitat), visual qualities objectives, and other resources as well as how these correlate to potential effect to roadless characteristic. Please see also the Wildlife and Forest Vegetation Reports, also in chapter 3 of the FEIS for more information.

Also, nowhere in the FEIS does it mention that the mountain pine beetle and fire are unnatural processes (see the Fire and Fuels as well as the Forested Vegetation reports and chapter 3 of the FEIS for more information). Additionally, please refer to the Forested Vegetation, Forest Introduction, and Fire and Fuels report for further information on how treatments are designed to mimic natural disturbances.

Cumulative effects with the Tenmile – South Helena Project:

> *"Also for cumulative effects of both projects, we would like to see a map that displays all the proposed activities in the Inventoried Roadless Areas from both projects."*

FS Response: A cumulative effects analysis has been included within the Telegraph Vegetation Project Roadless Expanse Report, also in chapter 3 of the FEIS. The cumulative effects analysis considered potential effects to the Jericho Mountain IRA roadless characteristics and takes into account Tenmile – South Helena proposed treatments. A map that displays all proposed activities in the IRA for both the Tenmile – South Helena and Telegraph Vegetation Project is located in the map section of the FEIS in

appendix G titled: Telegraph Vegetation Project Area Cumulative Effects Boundary and Past, Present and Foreseeable Projects.

The Continental Divide National Scenic Trail

Project Proposal: Under alternative 4, various vegetation and fuel treatment units are proposed on the west side of the Continental Divide National Scenic Trail for the purpose of meeting the project's purpose and need of addressing hazardous fuels.

Issue Summary: One comment was received that expressed concern about potential impacts to the Continental Divide Trail corridor.

> *"From both a solitude and visual impact, the Continental Divide Trail corridor should be protected. The CDT is nationally known and provides a basis for tourism, esthetic values, public health, and backcountry recreation."*

FS Response: The majority of the Continental Divide Trail (CDT) is located outside the Telegraph Vegetation Project area boundary on the eastside of the Continental Divide. Some views of treatments adjacent to the Continental Divide may be visible from the trail however, it is anticipated these views would be limited due to topographic screening. Treatments adjacent to the Continental Divide are located within Helena National Forest Management Areas M1, W1, and T1. Most of the treatments are located in T1. As discussed in the Telegraph Visuals Background Report, the project including alternative 4 would comply with Forest management area standard's visual quality objectives (see the Visuals Report and section in chapter 3 of this FEIS). It is also anticipated that there could be some potential short-term effects on solitude to CDT users during project implementation. Mechanical equipment and chainsaws may be heard in the distance from the trail during implementation. However, these potential impacts are anticipated to be short-term and last only during implementation (See the Roadless Expanse Resource Report and section in chapter 3 of the FEIS). Currently, noise can be heard periodically from the CDT from traffic on Highway 12 and the Rimini Road as well as ongoing noise from firewood gathers and OHV use on portions of the trail that are open to motorized vehicles. It is therefore also anticipated that the sense of solitude of the trails existing condition is already compromised to some extent.

Design Features

Project Proposal: Telegraph Vegetation Project proposed activities could potentially result in impacts to resources. Mitigations and other design features are incorporated with project proposals to minimize potential impacts.

Issue Summary: Some comments received suggested a number of design features be incorporated into the project design in order to address their concerns about potential project impacts.

> *"When scheduling multiple contracts and/or harvest operations please keep in mind the snowmobilers."*

FS Response: In chapter 2 of this Final EIS, design features has been incorporated to address potential conflicts with winter snowmobile routes. These include following:

- Coordinate project implementation with the Forest Public Affairs Officer and Law Enforcement to ensure the public, including winter recreation groups, is well informed of the schedule and its potential impacts.
- Before commencing over-snow operations, ensure an alternate over-snow vehicle recreation opportunities exist to reduce conflicts between harvest operations and forest recreational users.
  "We request that speed be controlled and dust abatement be applied for air quality."

FS Response: The road and its speed limit the commenter is referring to is under county jurisdiction. In chapter 2 of this Final EIS, design features has been incorporated that address dust abatement and air quality. This includes the following:

- A wetting agent (water or other dust-reduction material) would be applied as needed to decrease or eliminate dust generated from implementation activities on aggregate and native surface roads to provide for air quality and public safety.

Wildland Urban Interface (WUI)

Proposal Description: A portion of the project proposes vegetation and fuel treatments within WUI.

Issue Summary: A number of comments questioned whether or not the project fell within a designate WUI area. The quotes below provide examples of concerns on how the Forest Service defined WUI within the project area boundary.

> *"Alt 4 would treat 207 units (our best count) covering 8,103 acres, all outside of the designated Wildland Urban Interface as described by the Tri-County FireSafe Working Group Plan (2015*
>
> *"Please identify the Wildland-Urban Interface (WUI) for the projct area as defined in the Northern Rockies Lynx Management Direction."*

FS Response: The map in the DEIS on page 9, includes WUI information from both the Tri-County FireSafe Working Group Plan (2005) and the Powell County CWPP (2005). Maps have been updated in the FEIS and the Fire and Fuels report in order to better define the source document for the WUI's.

Road Decommissioning

Project Proposal: Under alternatives 3 and 4 of the Telegraph Vegetation project, proposes approximately 32.8 miles of road decommissioning.

Issue Summary: A few comments were received that requested further information about proposed road decommissioning under alternatives 3 and 4.

> *"Please identify the decommission level planned for all roads identified for decommissioning."*
>
> *"The impacts from route decommissioning projects include obliteration of the trail or removal of water control structures such as rolling dips and catch basins. Those soil erosion measures can often cost $15,000 to $20,000/mile to install (or replace). Other sections such as at-risk species, water quality, and ecosystems have the same recreation mitigation deficiencies and must be adequately addressed."*

FS Response: Proposed road decommission levels is discussed within the Hydrology Specialist Report and section in chapter 3 of this FEIS. Decommissioning of a road will include the following: Full

obliteration (re-contouring where the road cuts into a slope and de-compaction in flat terrain); Removal of fill and culverts at stream crossings, and restoration of natural stream channel contours; and Seeding/surface stabilization following obliteration. Potential impacts to other resources and mitigations pertaining to road decommissioning are also discussed throughout chapter 3 in various resource sections. Even though there could be some short-term sediment production resulting from road decommissioning activities, analysis determined there would potentially be a benefit to water quality, aquatic habitat, and soil in the long-term.

Other Road Activities

Project Proposal: Alternative 4 proposes a suite of road activities including road maintenance, road reconstruction, and temporary road construction.

Issue Summary: Comments were received that requested information on how long temporary roads would last post-implementation and whether or not they would be used again for motorized use. Another comment expressed concern about mitigation measures being implemented during road construction and reconstruction activities. One other comment was received requesting clarification on "Road Construction, Specified".

Duration Temporary Roads

> *"Alternative 4 does not state the allowable amount of time the temporary road would be on the landscape."*
>
> *"…please define why future management will not require use of these roads again. If these obliterated roads are NEVER going to be used again for motorized use, please identify this to the public."*

FS Response: As discussed in chapter 2 of this Final EIS under design features, all temporary roads would be decommissioned within 5 years following the completion of harvest activities in the units accessed by each road. Road decommissioning would include: full obliteration (re-contouring where the road cuts into a slope and de-compaction in flat terrain); removal of fill and culverts at stream crossings, and restoration of natural stream channel contours; and seeding/surface stabilization following obliteration. Until temporary roads can be decommissioned, they would be maintained to minimum haul standards to minimize the potential to develop sediment delivery vectors. If the Telegraph Vegetation project is implemented, areas within the project area would be monitored to determine the effectiveness of treatment-unit and road BMPs. Monitoring of BMPs, during and after project work, would be critical in determining whether applied measures are effective in minimizing sediment delivery to streams. The road improvement contracting officer's representative (COR) and timber sale administrator would monitor BMPs for proper implementation and effectiveness, and watershed staff would evaluate their effectiveness. Monitoring could include assessment of road conditions to determine effectiveness of road BMPs in reducing sediment delivery to streams. Where BMPs are shown to be inadequate in protecting water quality, they would be modified or project activities would be discontinued (Telegraph Vegetation Project Hydrology Specialist report). Temporary roads would also be closed to public motorized travel year-round. These roads for the Telegraph Vegetation Project would be improved or constructed to a minimal standard in order to provide access for harvesting equipment and log trucks. These roads would be closed to the public during implementation and decommissioned following use.

Telegraph Vegetation Project temporary roads would be decommissioned by obliteration, including: re-contouring (returning the prism to natural contour), removing culverts, replacing topsoil, placing woody debris upon the disturbed area to provide stability, and seeding the disturbed area.

Road Construction, Specified

> *"What does the following mean in the above table, "Road Construction, Specified" and why isn't it included in the "Temporary Road Construction" column."*

FS Response: Specified Road Construction (System) is define as follows: this road would be constructed to provide long-term access needs for public access and land management. This route was design to maintain access from the Golden Anchor Bridge to Ontario Creek and address sediment issues with the current transportation system. BMPs would be included in the location, design and construction. This route would remain in place and be added to the system.

Other Clarification (Comment Specific)

Comment: "Please identify the sizes of all clearcut opening that will occur in both the Tenmile and Telegraph projects, and define how these will impact lynx travel."

FS Response: Treatment prescriptions and associated acres for the Telegraph project are included in Appendix A of this FEIS. In addition, the Tenmile South Helena Project's unit specific information is included as Appendix A of that DEIS and also posted on the Helena – Lewis and Clark National Forest website. The analysis for Canada lynx has been completed for both projects and displayed within the appropriate project EIS. In addition, to direct and indirect effects, a cumulative effects analysis has been completed for Canada lynx with each project effects being considered.

Response to Literature Submitted by the Public on Telegraph Vegetation Project Public Check-in on the Forest Service's Proposed Alternative 4.

Literature submitted during the public comment period on the Draft EIS is omitted from this section. Please see Appendix E for those literature responses.

Michael Garrity (AWR), Sara Johnson (NEC), and Steve Kelly (MEDC)	
Schoennagel et al (2004)	Comment(s): We believe that best available science shows that Commercial Logging does not reduce the threat of Forest Fires. • *"we are concerned that the model of historical fire effects and 20th-century fire suppression in dry ponderosa pine forests is being applied uncritically across all Rocky Mountain forests, including where it is inappropriate.* • *"High-elevation subalpine forests in the Rocky Mountains typify ecosystems that experience infrequent, high-severity crown fires []. . . The most extensive subalpine forest types are composed of Engelmann spruce (Picea engelmannii), subalpine fir (Abies lasiocarpa), and lodgepole pine (Pinus contorta), all thinbarked trees easily killed by fire. Extensive stand-replacing fires occurred historically at long intervals (i.e., one to many centuries) in subalpine forests, typically in association with infrequent high-pressure blocking systems that promote extremely dry regional climate patterns."* • *"it is unlikely that the short period of fire exclusion has significantly altered the long fire intervals in subalpine forests. Furthermore, large, intense fires burning under dry conditions are very difficult, if not impossible, to suppress, and such fires account for the majority of area burned in subalpine forests.* • *"Moreover, there is no consistent relationship between time elapsed since the last fire and fuel abundance in subalpine forests, further undermining the idea that years of fire suppression have caused unnatural fuel buildup in this forest zone."* • *"No evidence suggests that spruce–fir or lodgepole pine forests have experienced substantial shifts in stand structure over recent decades as a result of fire suppression. Overall, variation in climate rather than in fuels appears to exert the largest influence on the size, timing, and severity of fires in subalpine forests []. We conclude that large, infrequent stand replacing fires are 'business as usual' in this forest type, not an artifact of fire suppression."* • *"Contrary to popular opinion, previous fire suppression, which was consistently effective from about 1950 through 1972, had only a minimal effect on the large fire event in 1988 []. Reconstruction of historical fires indicates that similar large, high-severity fires also occurred in the early 1700s []. Given the historical range of variability of fire regimes in high-elevation subalpine forests, fire behavior in Yellowstone during 1988, although severe, was neither unusual nor surprising."*

	• *"Mechanical fuel reduction in subalpine forests would not represent a restoration treatment but rather a departure from the natural range of variability in standstructure."* • *"Given the behavior of fire in Yellowstone in 1988, fuel reduction projects probably will not substantially reduce the frequency, size, or severity of wildfires under extreme weather conditions."* • *"The Yellowstone fires in 1988 revealed that variation in fuel conditions, as measured by stand age and density, had only minimal influence on fire behavior. Therefore, we expect fuel-reduction treatments in high-elevation forests to be generally unsuccessful in reducing fire frequency, severity, and size, given the overriding importance of extreme climate in controlling fire regimes in this zone. Thinning also will not restore subalpine forests, because they were dense historically and have not changed significantly in response to fire suppression. Thus, fuel-reduction efforts in most Rocky Mountain subalpine forests probably would not effectively mitigate the fire hazard, and these efforts may create new ecological problems by moving the forest structure outside the historic range of variability."* **FS Response:** The cited article is a case study of large wildfires in the Rocky Mountains to assess the potential effectiveness of fuel reduction treatments across a range of major forest types. The authors discuss the differences between high, mixed, and low severity fire regimes and the different forest types characteristic of each one. They conclude that fire regimes, climate, fuel type and abundance, and stand structure vary significantly across the Rocky Mountain region and thus suggest that a "one-size-fits-all" approach to reducing wildfire hazards in the Rocky Mountain region is unlikely to be effective. They also state: "in many places, there is an urgent need and a solid ecological basis for restoration and fire-mitigation efforts." The quotations provided by the commenter refer to subalpine forests characterized by high severity fire regimes. Within mixed severity fire regimes, the authors conclude, "fuel reduction treatments (mechanical thinning and prescribed burning) may effectively reduce fire severity under moderate weather conditions, but these treatments may not effectively mitigate fire behavior under extreme weather conditions." Within high severity fire regimes, the authors conclude, "fuel reduction projects probably will not substantially reduce the frequency, size, or severity of wildfires under extreme weather conditions." The fuel modeling, discussed in the Fire and Fuels report and section of the FEIS, conducted for the Telegraph Vegetation project suggests that treatments will be effective at modifying fire behavior to reduce the potential for high severity fire within treated areas under the much more frequent average temperature and precipitation weather conditions usually experienced in a western Montana summer.
Brown et al (2004)	Comment: We believe that best available science shows that Commercial Logging does not reduce the threat of Forest Fires.

	"At higher elevations, forests of subalpine fir, Engelmann spruce, mountain hemlock, and lodgepole or whitebark pine predominate. These forests also have long fire return intervals and contain a high proportion of fire sensitive trees. At periods averaging a few hundred years, extreme drought conditions would prime these forests for large, severe fires that would tend to set the forest back to an early successional stage, with a large carry-over of dead trees as a legacy of snags and logs in the regenerating forest . . . . natural ecological dynamics are largely preserved because fire suppression has been effective for less than one natural fire cycle. Thinning for restoration does not appear to be appropriate in these forests. Efforts to manipulate stand structures to reduce fire hazard will not only be of limited effectiveness but may also move systems away from pre-1850 conditions to the detriment of wildlife and watersheds." "Fuel levels may suggest a high fire 'hazard' under conventional assessments, but wildfire risk is typically low in these settings." **FS Response:** This literature is similar to the above response. It discusses types of thinning and fire and where these are applied for the purpose of modifying fire behavior. The research proposes low thinning is the most appropriate type of thinning practice. The context of the article is similar to that use in Schoennagel et al (2004) and does not address the conditions (MPB killed lodgepole pine) present in the Telegraph Vegetation project area. Furthermore, proposed treatments in the Telegraph project are designed to modify fuel behavior so as to improve conditions for fire suppression effectiveness as well as firefighter and public safety in the event of a wildfire. Furthermore, the fuel modeling, discussed in the Fire and Fuels report and section of the FEIS, conducted for the Telegraph Vegetation project suggests that treatments will be effective at modifying fire behavior to reduce the potential for high severity fire within treated areas.
Graham et al (2004)	Comment: We believe that best available science shows that Commercial Logging does not reduce the threat of Forest Fires. • *"Most important, the fire behavior characteristics are strikingly different for cold (for example, lodgepole pine, Engelmann spruce, subalpine fir), moist (for example, western hemlock, western red cedar, western white pine), and dry forests. Cold and moist forests tend to have long fire-return intervals, but fires that do occur tend to be high-intensity, stand-replacing fires. Dry forests historically had short intervals between fires, but most important, the fires had low to moderate severity."* • *"The probability of ignition is strongly related to fine fuel moisture content, air temperature, the amount of shading of surface fuels, and the occurrence of an ignition source (human or lightning caused) . . . . There is generally a warmer, dryer microclimate in more open stands (fig. 9) compared to denser stands. Dense stands (canopy cover) tend to provide more shading of fuels, keeping relative humidity higher and air and fuel temperature lower than in more open stands. Thus, dense stands tend to maintain higher surface fuel moisture contents*

	compared to more open stands. More open stands also tend to allow higher wind speeds that tend to dry fuels compared to dense stands. These factors may increase probability of ignition in some open canopy stands compared to dense canopy stands." **FS Response:** This report describes the types, quality, amount, and gaps of scientific knowledge for making informed decisions on fuel treatments used to modify wildfire behavior and effects in dry forests of the interior Western United States (especially forests dominated by ponderosa pine and Douglas-fir). A review of scientific principles and applications relevant to fuel treatment primarily for the dry forests is provided for the following topics: fuels, fire hazard, fire behavior, fire effects, forest structure, treatment effects and longevity, landscape fuel patterns, and scientific tools useful for management and planning. Like the previous literatures reviewed above, this research does not address beetle killed forest and is therefore irrelevant to the Telegraph Vegetation Project.
Timber Industry Fails to Convince Judges that Logging Levels Linked to Wildfires, Published by a New Century of Forest Planning, September 29, 2015	*"In a decision dismissing three lawsuits intended to compel more federal land logging in western Oregon, DC federal district court judge Richard Leon found that the timber industry failed to show that less logging means more wildfires (see page 7's footnote)."* *Judge Leon's ruling likely ends a two-decades long legal skirmish by the timber industry to compel federal agencies to increase logging levels from Northwest Forest Plan lands. The campaign has been led by the Portland-based American Forest Resource Council. For 20 years AFRC chose primarily the courts as its strategy to increase logging. Today's decision suggests that AFRC may change its focus from the courts to Congress* **FS Response:** The cited article is a two paragraph summary about how logging doesn't change fire numbers. The Forest Service has not said that it is trying to reduce the number of fires, and is not suggesting doing so with the Telegraph Vegetation project. Instead, the Telegraph project is intended to improve conditions for fire suppression effectiveness as well as firefighter and public safety.
Literature Submitted by Montana Wilderness Association – Wild Divide Chapter	
Ecological Effects of roads	Comment: We are concerned by the proposal's 9.7 miles of temporary roads and we strongly encourage the USFS to decrease the amount of temporary roads. Temporary roads not only have significant impacts during their active life, but also continue to have negative resource impacts long after they are obliterated. These impacts include the spread of invasive species, soil compaction, erosion, habitat fragmentation, and loss of natural character. Please see attached reference as supporting documentation for this point and the points below.
Kasworm WF, TL Manley. Road and trail influences on grizzly bears and black bears in northwest Montana. International Conference on Bear	This article is about research on radio locations from 3 grizzly bears (*Ursus arctos*) and 26 black bears (*U. americanus*) in the Cabinet Mountains of northwest Montana that were analyzed to

Research and Management. 1991;8: 79-84.	determine the effects of roads and trails on seasonal habitat use patterns from 1983 to 1988. This article was reviewed in light of the Telegraph Vegetation project. Analysis of bears in relation to temporary roads and closed roads used for hauling is included in the project's Wildlife Report and section in chatper 3 of the FEIS.
Ercelawn A. End of the Road: The Adverse Ecological Impacts of Roads and Logging: A Compilation of Independently Reviewed Research. NRDC. 2000.	This literature was unable to be found on the NRDC website or other internet sites.
Effects of clear-cutting:	Comment: We are also concerned by the more than 4,000 acres of proposed clearcuts. We encourage the use of prescribed fire and selective logging to meet project goals instead of clearcuts. Clearcuts on this scale would significantly degrade the landscape's natural characteristics, habitat security, backcountry recreational activities, and would increase landscape fragmentation.
Mannan RW, Meslow EC. Bird populations and vegetation characteristics in managed and old-growth forests, northeastern Oregon. Journal of Wildlife Management. 1984; 48: 1219–1238.	This article is about research on populations of breeding birds and structure and composition of vegetation that were examined in managed and old-growth mixed-coniferous forests in northeastern Oregon. It was reviewed in light of the Telegraph Vegetation Project.
Selmants PC, Knight DH. Understory plant species composition 30–50 years after clearcutting in southeastern Wyoming coniferous forests. Forest Ecology and Management. 2003; 185: 275–289.	This article evaluates the long-term effects of clearcutting and slash treatment on understory plant species composition in Rocky Mountain coniferous forests. It refers to collected comparable data from 30- to 50-year-old post-harvest stands and adjacent mature (>100-year-old) stands that originated after wildfire. This article was reviewed in regards to the Telegraph project and found to have little relevance because the project area has been effected by the mountain pine beetle which the article does not address.
Jones, J. A. and G. E. Grant. 1996. Peak flow responses to clear-cutting and roads in small and large basins, western Cascades, Oregon. Water Resources Research 32: 959-974.	This study examined long-term changes in peak flow events following clear-cutting and road construction in the H.J. Andrews Experimental Forest in the Cascade Range of western Oregon. The article was reviewed in regards to the Telegraph Project and while informative, the conclusions are not directly applicable due to the much drier climate of the Telegraph area. The majority of trees targeted for treatment in the Telegraph area are dead and do not transpire or intercept much snow (compared to live canopy), thus their removal would not measurably affect evapotranspiration/sublimation fluxes in the watershed. The referenced study does not discuss whether any Best Management Practices were implemented for road construction; however the Design Features for the Telegraph project require a number of preventative measures to limit the impact of roads on local hydrology. For further discussion on the potential effects of project activities on water yield under all alternatives, please see the results and discussion of the Equivalent Clearcut Area (ECA) analysis presented in the Hydrology report.

Megahan, W. F. 1983. Hydrologic effects of clearcutting and wildfire on steep granitic slopes in Idaho. Water Resources Research 19: 811-819.	This study evaluated the effects of clearcut logging and wildfire on the hydrology of steep, granitic headwater drainages in Idaho. The article was reviewed in light of the Telegraph Vegetation project. While informative, the conclusions are not directly applicable to the Telegraph project due to climatic and topographic differences, the Telegraph area being drier, less steep, and with less erodible soils. The majority of trees targeted for treatment in the Telegraph area are dead and do not transpire or intercept much snow (compared to live canopy), thus their removal would not measurably affect evapotranspiration/sublimation fluxes in the watershed. For further discussion on the potential effects of project activities on water yield under all alternatives, please see the results and discussion of the Equivalent Clearcut Area (ECA) analysis presented in the Hydrology report.

Appendix G – Maps

This appendix contains maps (listed below) for the Telegraph Vegetation Project Final Environment Impact Statement.

- Telegraph Vegetation Project Area Vicinity and the Wildland Urban Interface
- Alternative 2 – Proposed Action
- Alternative 3
- Alternative 4 (Preferred Alternative)
- Management Areas
- Telegraph Vegetation Project Area Cumulative Effects Boundaries and Past, Present and Foreseeable Projects.

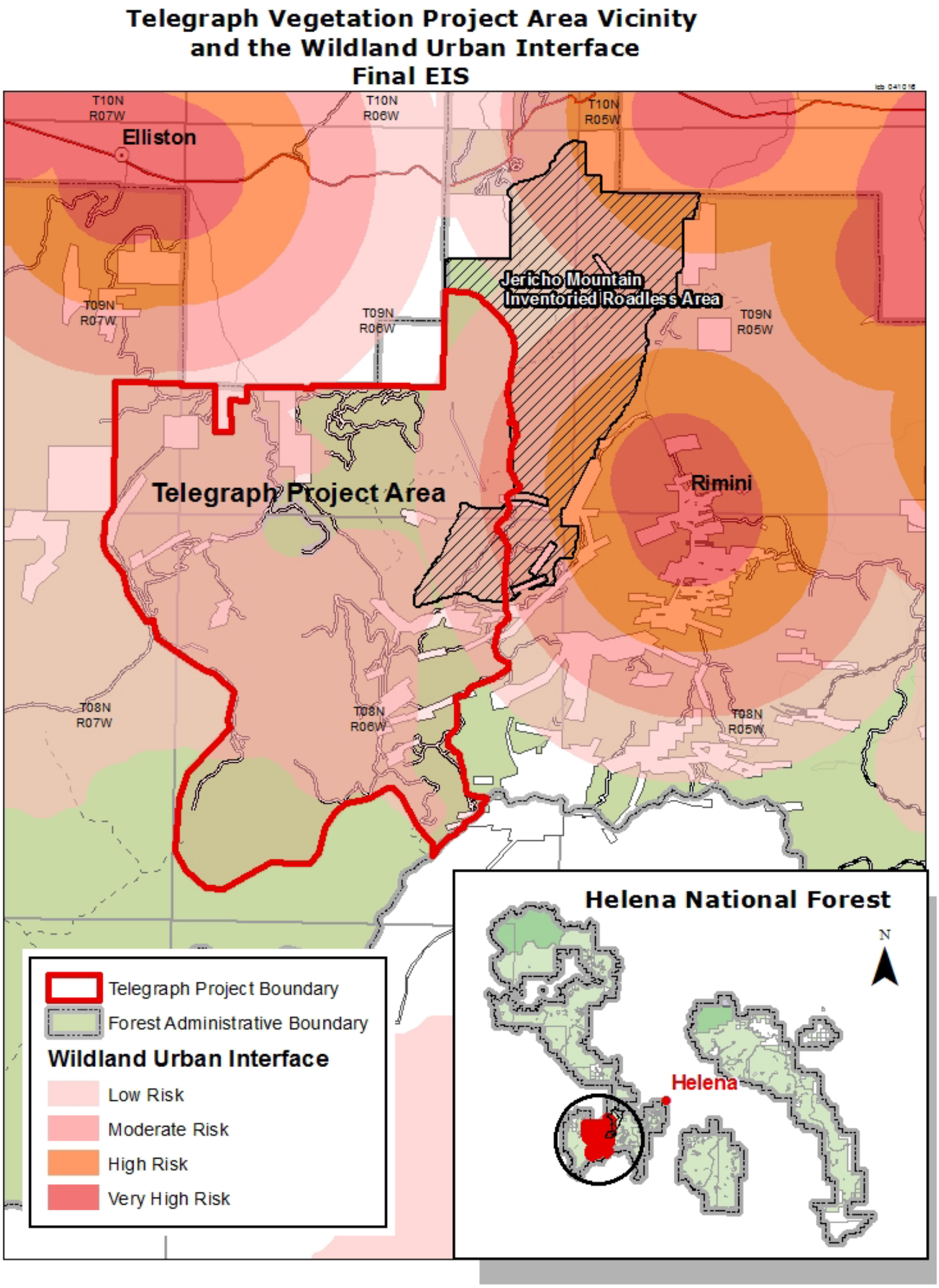

Figure G-1. Telegraph Vegetation Project vicinity and the wildland-urban interface

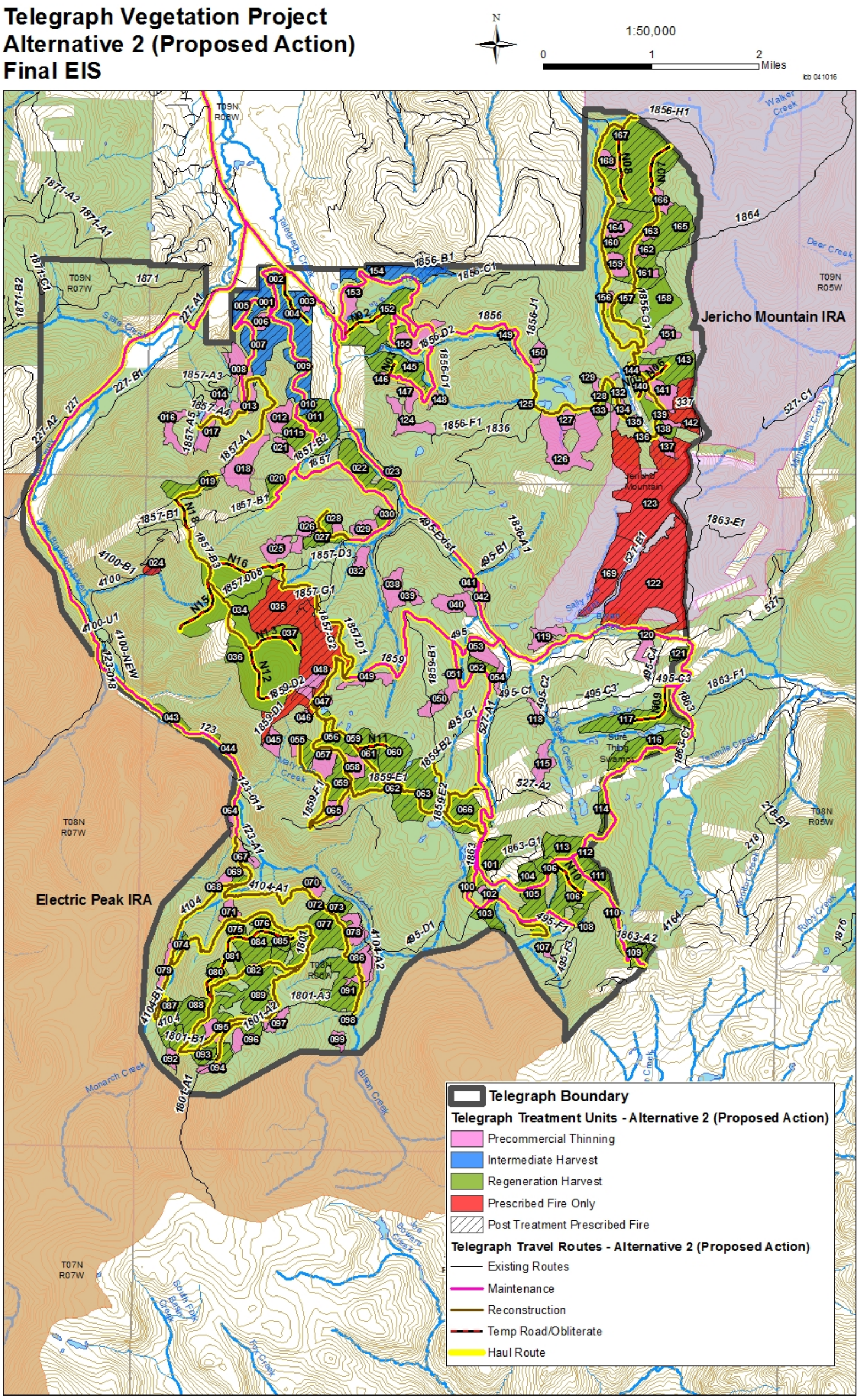

Figure G-2. Telegraph Vegetation Project alternative 2—Proposed action

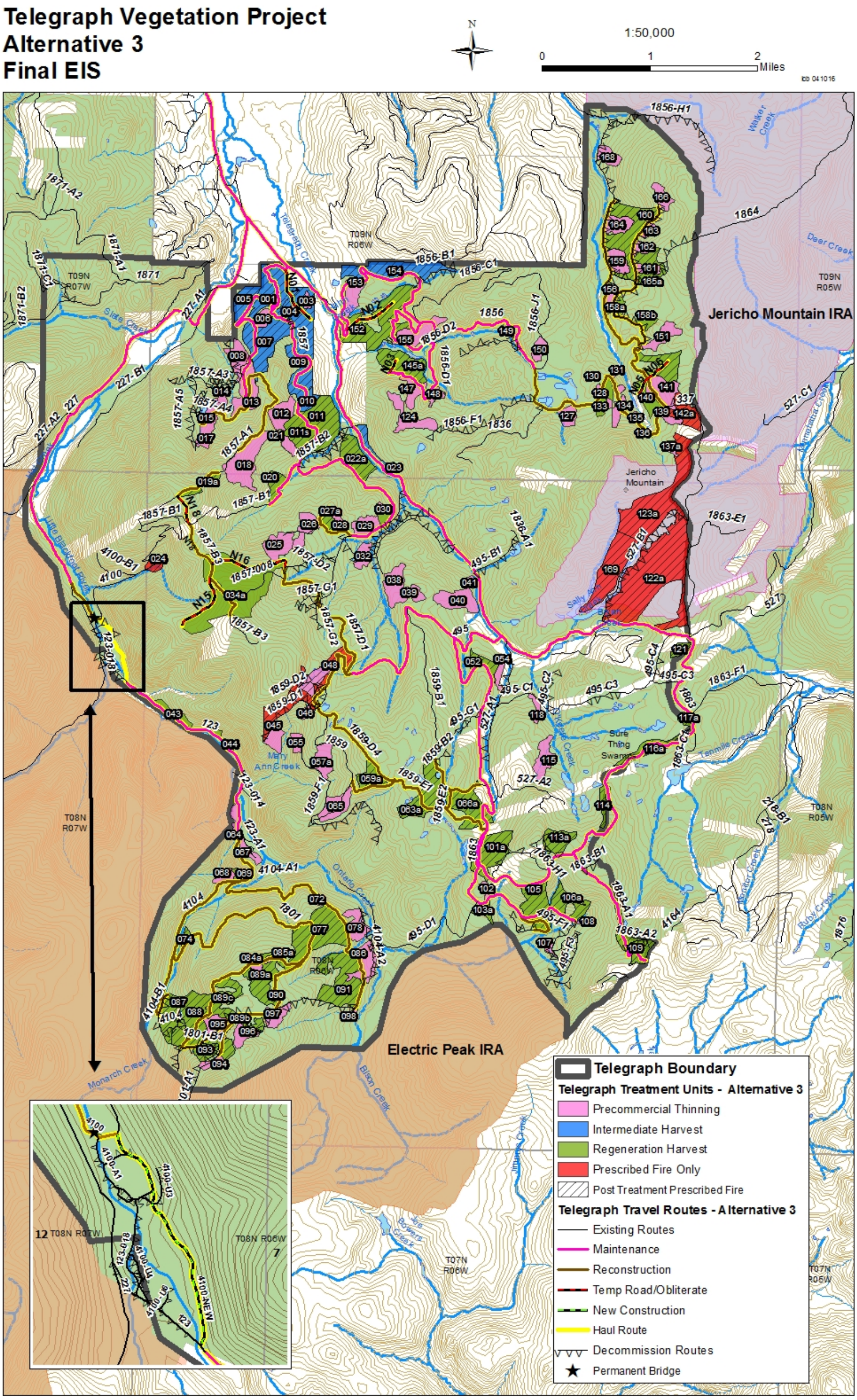

Figure G-3. Telegraph Vegetation Project alternative 3

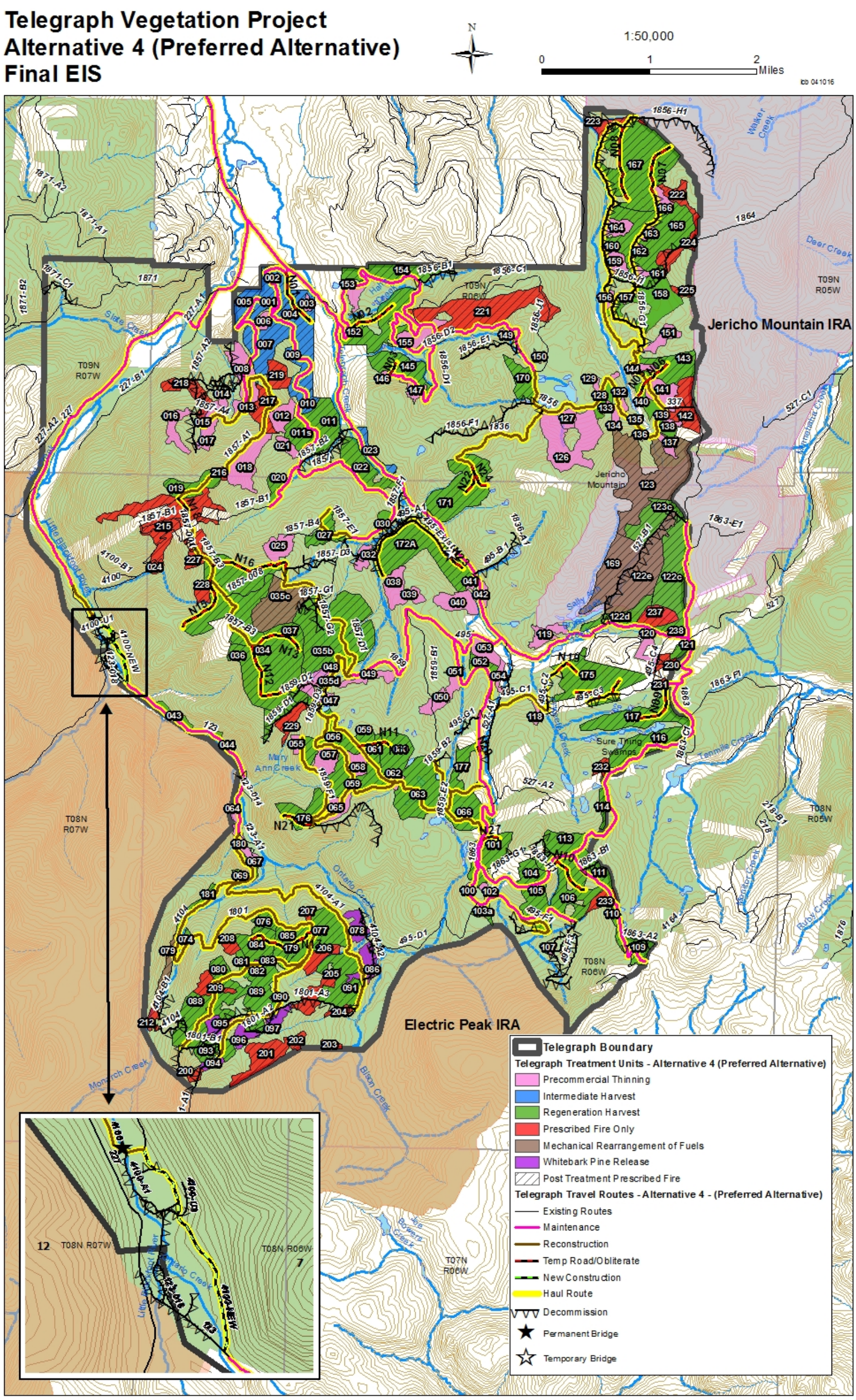

Figure G-4. Telegraph Vegetation Project alternative 4

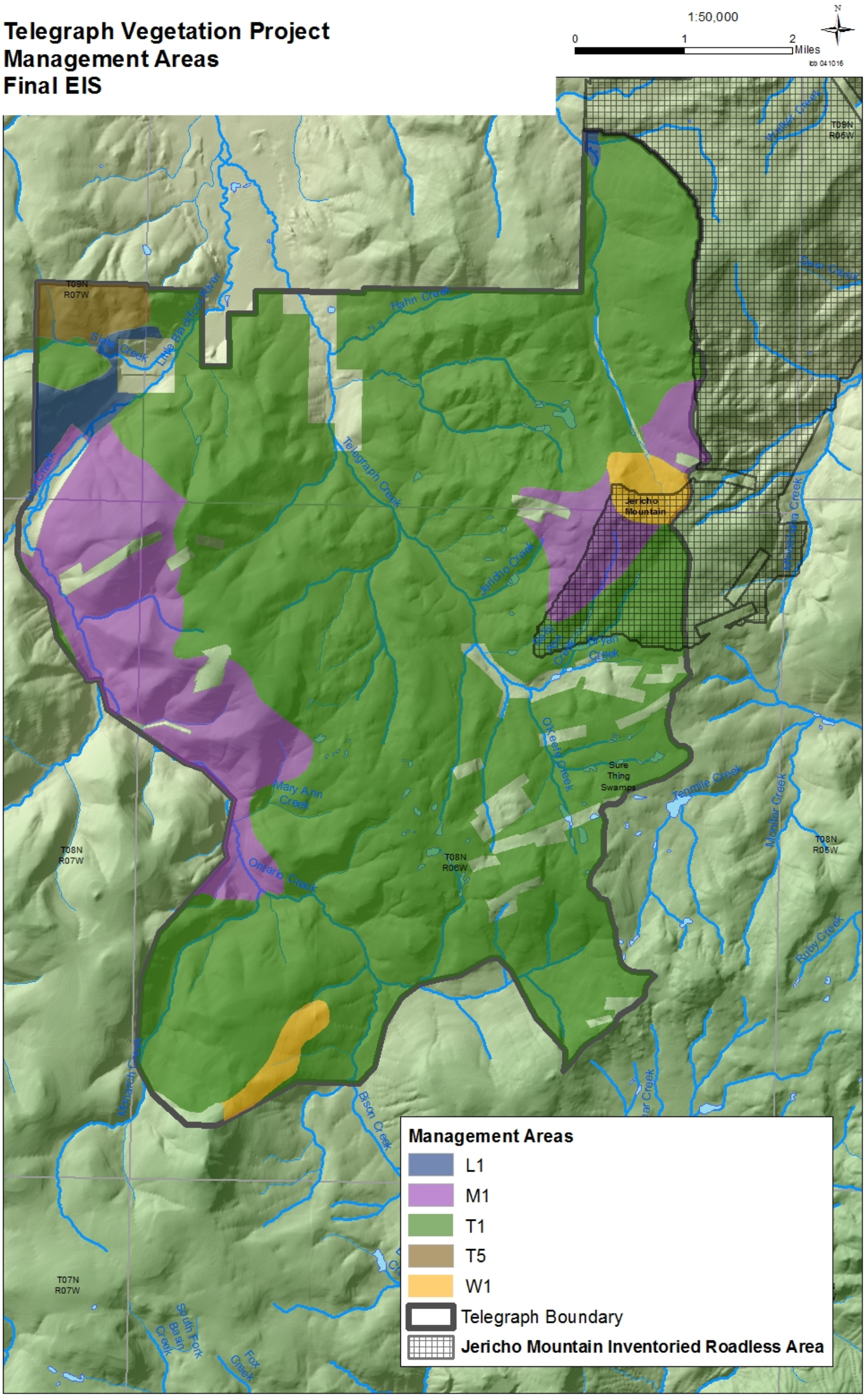

Figure G-5. Telegraph Vegetation Project management areas

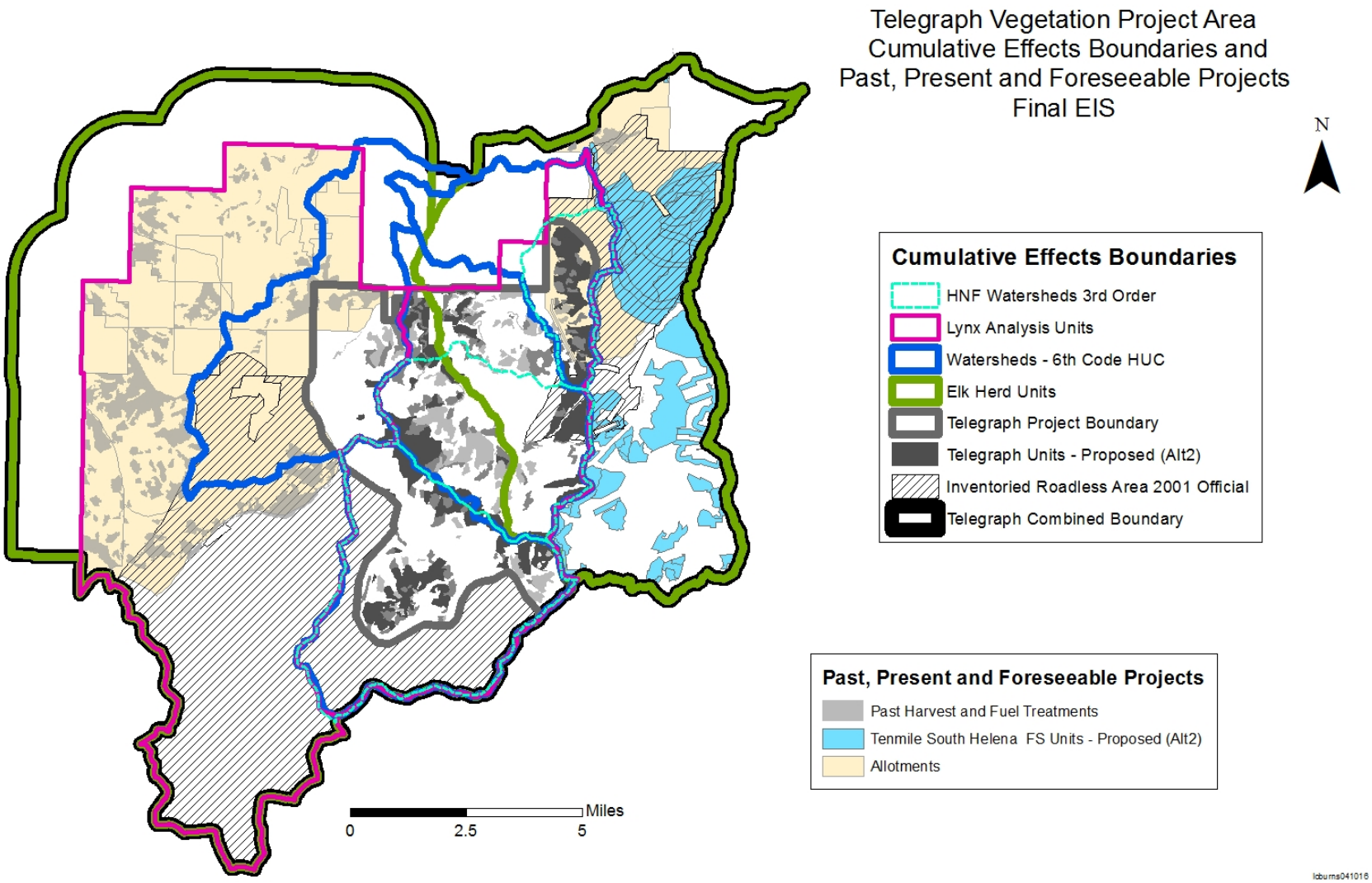

Figure G-6. Telegraph Vegetation Project area cumulative effects boundaries and past, present and foreseeable projects